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Section 0

General Information

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General Information

General Information

Introduction

RPO Code List

The following table provides the description of the Regular Production Option (RPO) codes that are available on the vehicle. The vehicle's RPO list is printed on the Service Parts Identification Label.

RPO	Description
2VL	PACKAGE - VL OPTION 2
3F9	SEAT BELT COLOR - RED (01)
4AA	INTERIOR TRIM - JET BLACK
4AE	INTERIOR TRIM - JET BLACK/FAWN
4B4	INTERIOR TRIM - JET BLACK/CERAMIC WHITE
4ID	INTERIOR TRIM - JET BLACK / SIGNET
4SG	PACKAGE - AT4 OPTION 2
4TX	PACKAGE - AT4X OPTION 4
4VL	PACKAGE - VL OPTION 4
5BO	ACCESSORY - LAMP KIT - OFF ROAD
5GD	CALIBRATION - TURN ON TOW/HAUL MODE
5SB	PACKAGE - DENALI OPTION 2
5VI	ACCESSORY - TIE DOWN RINGS - CARGO AREA
5VQ	ACCESSORY - PUBX BEDLINER - W/ INTEGRAL STORAGE COMPARTMENTS
5WI	ACCESSORY - TIE DOWN RINGS - CARGO AREA, MOVEABLE
5XC	ACCESSORY - SNORKEL - AIR INTAKE
65C	LABEL, WARNING - CALIFORNIA, PROP 65 COMPLIANT
6K5	ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
6K5	CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE
6K5	COMPARTMENT - STOWAGE TAILGATE
6K5	EQUIPMENT - ASSIST, OPEN & CLOSE, TAILGATE
6K5	HEATER SEAT FRT - DRVR & PASS
6K5	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
6K5	INTERIOR TRIM CONFIG - VINYL, LEVEL 1, JET BLACK
6K5	LOCK CYLINDER - RR COMPT
6K5	LUMBAR DRIVER - SEAT, POWER, 2 WAY
6K5	MIRROR I/S R/V - LT SENSITIVE
6K5	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
6K5	REMOTE START - VEHICLE
6K5	STEERING COLUMN - TILT, TELESCOPING
6K5	STEERING WHEEL - SYNTHETIC, 4 SPOKE, SPORT, ROUND
6K5	STEERING WHEEL HEAT - AUTOMATIC
6K9	ACCESSORY - HANGING BED DIVIDER BRACKET
719	SEAT BELT COLOR - BLACK (10)
A28	WINDOW RR - FULL WIDTH, SLIDING, MANUAL
A2V	ADJUSTER DRIVER SEAT - 6WAY, DISCONT MAN RECLINE, MAN FORE/AFT, MAN HEIGHT
A2X	ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
A45	MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
A50	SEAT - FRT BKT
A7E	ADJUSTER PASS ST - 4WAY, DISCONT MAN RECLINE, MAN FORE/AFT
A7J	ADJUSTER PASS ST - 6WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT
A91	LOCK CONTROL RR CMPT - TAILGATE, REM CONT ELEC OPEN/CLOSE
AAK	ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 1
ACH	RESTRAINT PROVISIONS - RETRACTOR, AUTOMATIC LOCKING
AED	WINDOW REG PASS DR - POWER OPERATED,EXPRESS DOWN
AEO	RESTRAINT - SEAT BELT 2ND TENSIONER, FRT
AEQ	WINDOW REG REAR DR - POWER OPERATED, EXPRESS DOWN
AGG	WINDOW SIDE FRT - LAMINATED, SOLAR GLAZING
AGJ	WINDOW SIDE FRT - TEMPERED, SOLAR GLAZING
AKK	WINDSHIELD STYLE - ACOUSTIC PVB
AKO	WINDOW TYPE - PRIVACY
AKX	WINDSHIELD TYPE - SOLAR ABSORBING
AL0	SENSOR INDICATOR - INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR
AL9	LUMBAR DRIVER - SEAT, POWER, 2 WAY
AQP	RESTRAINT - HEAD, RR SEAT, CENTER
ARU	WINDOW SIDE RR - TEMPERED, PRIVACY GLAZING
AT7	RESTRAINT SYSTEM RR - SEAT, SHLDR, RETR, 3 POINT, 3 SHLDR

RPO	Description
AT9	LUMBAR PASSENGER - SEAT, POWER, 2 WAY
AUW	SEAT REAR - FOLDING, CUSHION 60/40, STORAGE BOX
AVJ	LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS
AVN	RESTRAINT - HEAD, RR SEAT
AXG	WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN
AXK	VEHICLE TYPE - TRUCK
AYH	RESTRAINT SYSTEM - DRVR (SINGLE, ADAPTIVE) & PASS (DUAL) FRT, SEAT SIDE, ROOF SIDE
B26	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
B26	PARK ASSIST - REAR
B26	REAR CROSS TRAFFIC - ALERT, BRAKING
B26	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST
B26	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW
B30	COVERING FLOOR - CARPET
B34	COVERING FRT - FLOOR MATS, CARPETED INSERT
B35	COVERING REAR - FLOOR MATS, CARPETED INSERT
B96	MOLDING WHL OPENING -
BDR	LOCK CYLINDER - RR COMPT
BPC	COMPARTMENT - STOWAGE TAILGATE
BPH	ACCESSORY - LAMP KIT - OFF ROAD
BPH	ACCESSORY - LAMPS - FRONT GRILLE MOUNTED - OFF-ROAD
BPH	BUMPER FRT - BLACK
BPH	EQUIPMENT - SUPPLIER INSTALLED
BPH	PLATE - FRT UNDERBODY, SKID
BPH	RELAY - AUX BATTERY (SEO)
BPH	SWITCH - AUXILIARY POWER
BPH	WIRING PROVISIONS - AUXILIARY LAMPS
BRZ	ACCESSORY - ASSIST STEPS - OFF ROAD
BRZ	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 2
BRZ	ACCESSORY - DECAL PACKAGE - BODYSIDE - DESIGN 5
BRZ	ACCESSORY - DECAL PACKAGE - DESIGN 3
BRZ	ACCESSORY - TOW HOOKS - ALT FINISH
BS0	INSULATION - FLR, ACOUSTICAL PKG, VAR. 1
BS5	INSULATION - FLR, ACOUSTICAL PKG, VAR. 2
BTM	SWITCH - START, KEYLESS
BTV	REMOTE START - VEHICLE
BVZ	STEPS, RUNNINGBOARD - SIDE, NONE
BW5	MOLDING B/S (OPEL) - EXTR, MLDG, SIDE WINDOW REVEAL, BLACK
BW7	ORNAMENTATION - EXTR, PLR APLQ
BWN	STEPS - CORNER ASSIST, BUMPER
BZT	STEPS, RUNNINGBOARD - PROTECTOR, ROCKER PANEL, BLACK
C49	DEFOGGER - RR WINDOW, ELECTRIC
C59	VENT - AIR, CONSOLE, RR
C67	HVAC SYSTEM - AIR CONDITIONER FRT, ELECTRONIC CONTROLS
C75	LAMP - INTR, FRT HEADER, COURTESY & DUAL READING
C7C	HEATER - AIR CONDITIONER DUCT, RR PASS
C91	LAMP - INTR, ROOF, COURTESY
CAC	ROOF - SUN, SINGLE GLASS, INR SLIDING, MAN SUNSHADE
CGN	LINER - PUBX, SPRAY ON
CJ2	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
CTT	HITCH ASSIST - GUIDELINES
CW6	COUNTRY - GUAM
CWM	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
CWM	LOCK CYLINDER - RR COMPT
CWM	SALES PACKAGE - CONVENIENCE II
CWM	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
CWM	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
CWM	VISION - 360 VIEW, MONO, HD DIGITAL
D07	CONSOLE - FRT COMPT, FLOOR, CUSTOM
D31	MIRROR I/S R/V - TILT
D4J	COUNTRY - US VIRGIN ISLAND
D75	HANDLE O/S DOOR - BODY COLOR
DA5	ARM REST - RR SEAT, CENTER
DAG	SUNSHADE - DRIVER, MIRROR, COVER, PASS, MIRROR, COVER
DD8	MIRROR I/S R/V - LT SENSITIVE
DEG	SUNSHADE - DRIVER, MIRROR, COVER, ILLUM, SLIDING, PASS, MIRROR, COVER, ILLUM, SLIDING
DIL	LENS INFOT DISPLAY - FULL GLASS

RPO	Description
DLF	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
DNS	EQUIPMENT - SUPPLIER INSTALLED
DP6	MIRROR PROVISIONS - HOUSING, PAINTED
DP9	MIRROR PROVISIONS - HOUSING, CHROME
E15	STEPS - ASSIST, CHROME
E20	HANDLE O/S DOOR - CHROME
E33	HANDLE - I/S, DR, GLOSSY CHROME
E63	BODY EQUIPMENT - FLEETSIDE PICK-UP BOX
E6J	COUNTRY - PUERTO RICO
E90	POCKET - FRONT SEAT BACK, DRIVER
E91	POCKET - FRONT SEAT BACK, PASS
EF7	COUNTRY - UNITED STATES OF AMERICA (USA)
ENL	ENG CONTROL DISABLE - STOP/START, NON-LATCHING
F46	CHASSIS DRIVE LINE - ALL WHEEL DRIVE (AWD)/FOUR WHEEL DRIVE(4WD)
FE9	CERTIFICATION - EMISSION, FEDERAL
FJW	VEHICLE FUEL - GASOLINE E15
G42	PRIMARY COLOR - EXTERIOR, WHITE SANDS SOLID (234L)
G80	AXLE POSITRACTION - LIMITED SLIP
G93	AXLE - FRT ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
G94	AXLE - RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
GAE	PRIMARY COLOR - EXTERIOR, DRIFT MET-1 (220K)
GAL	PRIMARY COLOR - EXTERIOR, REEF MET-1 (225K)
GAZ	PRIMARY COLOR - EXTERIOR, SUMMIT WHITE (G) 8624
GBA	PRIMARY COLOR - EXTERIOR, BLACK (G) 8555
GBF	PRIMARY COLOR - EXTERIOR, PAPAYA SOLID (230K)
GNT	PRIMARY COLOR - EXTERIOR, RADIANT RED TINT MET-1 (170H)
GU6	AXLE REAR - 3.42 RATIO
GXD	PRIMARY COLOR - EXTERIOR, SHARKSKIN MET-1 (130H)
H2Z	INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, VAR1, JET BLACK
HNN	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK / FAWN
HS1	ALERT - SAFETY HAPTIC SEAT
HV1	INTERIOR TRIM CONFIG - LEATHER, LEVEL 3.1, JET BLACK / CERAMIC WHITE

RPO	Description
HV6	INTERIOR TRIM CONFIG - CLOTH/VINYL, LEVEL 1, JET BLACK / SIGNET
HX6	INTERIOR TRIM CONFIG - LEATHER, LEVEL 3, JET BLACK / SIGNET
HXR	INTERIOR TRIM CONFIG - VINYL, LEVEL 2, JET BLACK
IKP	VEH CONTENT BASIS - US
IVD	INFOTAINMENT - VIRTUAL COCKPIT SYS - MID
J26	ENGINEERING YEAR - 2026
JCF	BRAKE ROTOR - FNC
JGU	BRAKE SYSTEM - 17" FRT FIXED CALIPER DISC, 17" RR SLIDING CALIPER DISC
JHE	CONTROL - HILL DESCENT CONTROL (HDC)
JL1	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
K05	HEATER ENG - BLOCK
K1O	FILTER MONITOR - ENGINE AIR
K34	CRUISE CONTROL - AUTOMATIC, ELECTRONIC
K4F	BATTERY - LN4, AGM, 12V, 80AH, 800 ENCCA
K7A	CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE
KA1	HEATER SEAT FRT - DRVR & PASS
KC9	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
KI3	STEERING WHEEL HEAT - AUTOMATIC
KI6	RECEPTCL FRT CNSL RR - ELECTRICAL, 110 VOLT
KL9	ENG CONTROL - STOP/START SYS, CONVENTIONAL AT, CONVENTIONAL MT OR BRAKE RELEASE LATE RESTART
KPA	RECEPTACLE - ELECTRICAL, FRT CONSOLE RR, 12 VOLT
KQX	CAP - FUEL FILL, CAPLESS SYSTEM
KRV	REFRIGERANT - LOW GWP
KSG	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
KU9	VENTILATED SEAT FRT - DRVR & PASS
KW5	GENERATOR - 220 AMP
L3B	ENGINE - GAS, 4 CYL, L4, 2.7L, SIDI, VVT, TURBO, DOHC, ALUM
LHD	VEHICLE DRIVE - LEFTHAND DRIVE
MFC	TRANSMISSION - AUTO 8 SPD, 8L80, GEN 2, ATSS, CPA
MFI	MOLDING B/S UPPER - SPORT, WINDOW ALL AROUND
N33	STEERING COLUMN - TILT TYPE
N37	STEERING COLUMN - TILT, TELESCOPING

RPO	Description
N5G	STEERING WHEEL - SYNTHETIC, 4 SPOKE, SPORT, ROUND
NAM	NAVIGATION - APPS
NCH	LOCK - MANUAL CHILD LOCK SYSTEM (REAR DOOR LATCH)
NE1	CERTIFICATION - EMISSION, GEOGRAPHICALLY RESTRICTED REGISTRATION
NE8	EVAPORATIVE SYSTEM - LEVEL 3 EMISSIONS
NKD	NOISE CONTROL - SOUND ENHANCEMENT
NLB	EMISSION SYSTEM - SULEV30/BIN30: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV
NP0	TRANSFER CASE - ACTIVE, SINGLE SPEED,SWITCH ACTIVATED,ALUM
NQH	TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
NYG	WHEEL SPARE - 20 X 9.0, J, ALUMINUM, DESIGN 3
P1D	CARRIER - BED MOUNTED, SPARE TIRE
PAN	PHONE PROJ TECH - VAR 1
PAP	PHONE PROJ TECH - VAR 2
PPA	EQUIPMENT - ASSIST, OPEN & CLOSE, TAILGATE
PPW	PHONE PROJECTION - PHONE PROJECTION WIRELESS
PZ8	IMAGE ADJUSTMENT - HITCH VIEW
PZ9	PLATE - SKID, FUEL TANK
PZG	PLATE - SKID FRT
PZL	PLATE - SKID RR DIFFERENTIAL
PZN	PLATE - SKID TRANSFER CASE
PZZ	PLATE - FRT UNDERBODY, SKID
Q2P	TIRE ALL - 265/65R18 SL 114T AT VAR 2
QAE	TIRE ALL - 275/60R20 SL 115S BW AT
QAF	TIRE ALL - LT285/70R17 C 116/113Q BW OOR
QE1	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 20
QE2	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 21
QTE	TIRE ALL - LT315/70R17 C 113/110 S BW OOR VAR1
R34	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 5
R5C	TIRE BRAND ALL - BRIDGESTONE
R88	ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 2
RD4	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 4
RD8	TIRE SPARE - LT315/70R17 C 113/110 S BW OOR VAR 1

RPO	Description
RDI	ACCESSORY - KEYLESS ENTRY
RHO	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 19
RIA	ACCESSORY - FLOOR LINER - CONTOURED
RIK	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
RM7	WHEEL SPARE - 17 X 8.0, J, STEEL, DESIGN 1
RMR	TIRE SPARE - LT285/70R17 C 116/113Q BW OOR
RMW	TIRE SPARE - 275/60R20 SL 115S BW AT
RPM	WHEEL - 17 X 8.5, J, ALUMINUM, DESIGN 8
RPP	WHEEL - 17 X 8.0, J, STEEL, DESIGN 4
RPS	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 13
RSR	OCCUPANT DETECT SYS - REAR SEAT, DOOR ACTIVATED
RVP	ACCESSORY - ASSIST STEPS - REMOVABLE
RVY	ACCESSORY - PUBX CARGO DIVIDER
RW2	ACCESSORY - BED RAILS - BLACK
RWF	ACCESSORY - JOUNCE SHOCKS
RWL	CHASSIS DRIVE LINE - REAR WHEEL DRIVE (RWD)
RXH	ACCESSORY - CENTER CAP - WHEEL - DESIGN 1
RYT	ACCESSORY - FIRST AID KIT
RZU	ACCESSORY - LAMPS-AUX OFF ROAD
S08	ACCESSORY - HIGHWAY SAFETY KIT
S0Y	ACCESSORY - LAMPS - CARGO AREA
S1H	ACCESSORY - OFF-ROAD RECOVERY KIT
S1L	ACCESSORY - OFF-ROAD PRE-FILTER
S3W	ACCESSORY - LAMPS - FRONT GRILLE MOUNTED - OFF-ROAD
S3X	ACCESSORY - LAMPS - FRONT ROOF MOUNTED - OFF-ROAD
S47	ACCESSORY - LUG NUTS
S4K	ACCESSORY - CARGO STRAP - FLEXIBLE ORGANIZER - RR COMPT
S6L	ACCESSORY - PROTECTOR - ROCKER PANEL
S6P	ACCESSORY - REMOTE START KIT
SA5	ACCESSORY - SHIELD - UNDERBODY
SAB	RELAY - AUX BATTERY (SEO)
SAM	ACCESSORY - SKID PLATES
SAX	ACCESSORY - SPEAKER KIT - LEVEL 1
SB1	ACCESSORY - SPLASH GUARDS - FLAT

RPO	Description
SBY	ACCESSORY - SPORT BAR - BED MOUNTED - DESIGN 1
SD5	ACCESSORY - TIRE PRESSURE MONITOR
SDT	ACCESSORY - TRAILOR HITCH - HOLDER
SFE	ACCESSORY - WHEEL LOCKS
SFZ	ACCESSORY - EMBLEM - EXTERIOR - DESIGN 1
SIQ	ACCESSORY - SKID PLATES - FRONT DESIGN 1
SIR	ACCESSORY - SKID PLATES - REAR DESIGN 1
SJ8	ACCESSORY - ILLUMINATION PACKAGE - INTERIOR AMBIENT
SJS	ACCESSORY - UTILITY WALL - FRONT
SKN	WHEEL SPARE - 17 X 8.5, J, ALUMINUM, DESIGN 2
SMU	ACCESSORY - WHEEL - 17 X 8.0 - J - ALUMINUM - DESIGN 2
SMZ	ACCESSORY - OFF ROAD DRIVE SHAFT
SNX	ACCESSORY - WHEEL - 20 X 9 - J - ALUMINUM - DESIGN 1
SPY	ACCESSORY - LUG NUTS - ALT FINISH
SPZ	ACCESSORY - WHEEL LOCKS - ALT FINISH
SQI	ACCESSORY - SUSPENSION LIFT KIT
SQJ	ACCESSORY - SUSPENSION LIFT KIT - VARIATION 2
SRL	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 13
SRV	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 14
ST0	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
ST0	TIRE ALL - 265/60R18 SL 110T BW AL2
ST0	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 2
T3V	LAMP - CHMSL - CENTER HIGH MOUNT STOP LIGHT (SEE BFO BEFORE USING)
T40	LAMP FRT FOG - FRT FOG, LED
T4L	HEADLAMPS - LED
T7E	LAMP SYSTEM - DAYTIME RUNNING, LED
T83	CONTROL, HEADLAMPS - AUTOMATIC ON-OFF
T8Z	SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 3, INFOTAINMENT CUSTOMIZABLE
T93	LAMP - TAIL & STOP, SPECIAL
TCA	LAMP - DOME, CENTER
TDM	MODE DRIVER SETTINGS - TEEN DRIVER, INFOTAINMENT

RPO	Description
TGZ	ACCESSORY - TAILGATE ORGANIZER DESIGN 3
TQ5	HEADLAMP HIGH BEAM - AUTO CONTROL
U1D	INDICATOR - TRAILER INFORMATION
U2K	DIGITAL AUDIO SYSTEM - S-BAND
U91	ANTENNA - SHORT, ROOF, RADIO
UBD	RECPT USB FLR CNSL F - DUAL, CHARGE, DATA
UBI	RECPT USB FLR CNSL R - DUAL, CHARGE
UBP	RECPT USB FLR CNSL R - SINGLE, CHARGE
UD7	PARK ASSIST - REAR
UE1	COMMUNICATION SYSTEM - VEHICLE, ONSTAR
UE4	SENSOR INDICATOR - FOLLOWING DISTANCE
UEU	SENSOR INDICATOR - FORWARD COLLISION ALERT
UF2	LAMP - CARGO
UFB	REAR CROSS TRAFFIC - ALERT, BRAKING
UGA	HOOK - TOW, RED
UH5	INDICATOR - SEAT BELT WARNING, REAR SEAT
UHX	LANE ACTIVE SAFETY - KEEP ASSIST
UHY	COLL IMMINENT BRK - LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST
UIT	ALERT DISPLAY - REFLECTED, SINGLE COLOR
UJA	SWITCH - AUXILIARY POWER
UJN	TIRE PRESS INDICATOR - AUTO LEARN
UKK	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
UKT	PED DETECTION FRT - ENHANCED, PEDESTRIANS AND BICYLISTS
UKW	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW
ULK	ACCESSORY - TOW HOOKS - RED
ULV	ACCESSORY - FLOOR LINER - CONTOURED
ULV	ACCESSORY - JOUNCE SHOCKS
ULV	ACCESSORY - WHEEL FLARES
ULV	BUMPER - RR, VAR 1
ULV	BUMPER FRT - SPORT
ULV	CARRIER - BED MOUNTED, SPARE TIRE
ULV	EQUIPMENT - SUPPLIER INSTALLED
ULV	PLATE - SKID FRT
ULV	PLATE - SKID RR DIFFERENTIAL

RPO	Description
ULV	PLATE - SKID TRANSFER CASE
ULV	PLATE - SKID, FUEL TANK
ULV	TIRE ALL - LT315/70R17 C 113/110 S BW OOR VAR1
ULV	TIRE SPARE - LT315/70R17 C 113/110 S BW OOR VAR 1
ULV	WHEEL - 17 X 8.5, J, ALUMINUM, DESIGN 6
ULV	WHEEL SPARE - 17 X 8.5, J, ALUMINUM, DESIGN 1
UMN	SPEEDOMETER - INST, MILES & KILO, MILES ODOMETER
UNW	ACCESSORY - UTILITY WALL U-NUT
UQ3	SPEAKER SYSTEM - ENHANCED AUDIO
UQA	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
URC	SWITCH - FLEXRIDE MODE SYSTEM
URF	DISPLAY INSTRUMENT - DRIVER INFO, DISPLAY ONLY, FAMILY C, 11", 2000 X 810
URL	INFOTAINMENT DISPLAY - FAMILY C, 11"+, 2000X970
UTJ	THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY
UUA	DISPLAY AOS - OCCUPANT SENSING, MVSS
UUT	ALARM, HORN - TIRE FILL ALERT
UV2	VISION - 360 VIEW, MONO, HD DIGITAL
UV6	HEAD UP DISPLAY - WINDSHIELD
UVB	VISION - REAR VIEW, MONO, HD DIGITAL
UXA	VISION UNDERBODY - FORWARD AND REARWARD FACING
V8D	VEHICLE STATEMENT - VEHICLE LABEL CONTENT - U.S. FMVSS
VAV	ACCESSORY - FLOOR MATS - ALL WEATHER
VBP	ACCESSORY - POWER DISTRIBUTION BOX
VBR	ACCESSORY - PUBX RUBBER MAT
VH6	BUMPER FRT - BLACK
VHM	PROGNOSTIC SYSTEM - VEHICLE HEALTH MANAGEMENT
VJQ	HOOK - TOW, FRT
VK3	LICENSE PLATE FRONT - FRT MOUNTING PKG
VKV	ACCESSORY - WHEEL FLARES
VOZ	ACCESSORY - TONNEAU - RR COMPT - HARD FOLDING - ALT DESIGN
VPB	ACCESSORY - TONNEAU - RR COMPT - VINYL W/ INTEGRAL CROSSBOW SUPPORTS
VQD	BUMPER FRT - CHANNEL, STEEL, BLACK

RPO	Description
VQH	BUMPER - RR, VAR 1
VQK	ACCESSORY - SPLASH GUARDS - CUSTOM MOLDED
VQM	ACCESSORY - ASSIST STEPS - CHROME
VQO	ACCESSORY - ASSIST STEPS - BLACK
VQZ	ACCESSORY - EXHAUST TIP - DESIGN 1
VST	ACCESSORY - SILL PLATES - ALTERNATE DESIGN 1
VTA	ACCESSORY - EXHAUST TIP - DESIGN 2
VV4	COMMUNICATION EQUIP - MOBILE INTERNET CONNECTIVITY
VW1	ACCESSORY - WINCH
VW9	ACCESSORY - CENTER CAP - WHEEL - DESIGN 3
VWD	ACCESSORY - CENTER CAP - WHEEL - DESIGN 4
VZJ	ACCESSORY - SWITCH PLATE - INTERIOR
VZT	ACCESSORY - ASSIST STEPS - OFF ROAD
W0H	ACCESSORY - TOW HOOKS - ALT FINISH
W1Y	CONTROL - STEERING WHEEL, RADIO, REDUNDANT CONTROLS
W7X	PERFORMANCE PACKAGE - INCREASED ENGINE HORSE POWER
WCF	ACCESSORY - REAR BUMPER STEP INSERT
WEN	PLANT CODE - WENTZVILLE, MO, USA
WJP	ACCESSORY - ASSIST STEPS - BLACK
WJP	ACCESSORY - ASSIST STEPS - OFF ROAD
WJP	ACCESSORY - ASSIST STEPS - REMOVABLE
WJP	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
WJP	ACCESSORY - EXHAUST TIP - DESIGN 2
WJP	ACCESSORY - FLOOR LINER - CONTOURED
WJP	ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 2
WJP	ACCESSORY - LAMPS - FRONT ROOF MOUNTED - OFF-ROAD
WJP	ACCESSORY - POWER DISTRIBUTION BOX
WJP	ACCESSORY - SILL PLATES - ALTERNATE DESIGN 1
WJP	ACCESSORY - SPLASH GUARDS - CUSTOM MOLDED
WJP	ACCESSORY - SPORT BAR - BED MOUNTED - DESIGN 1
WJP	ACCESSORY - SWITCH PLATE - INTERIOR
WJP	HOOK - TOW, FRT

RPO	Description
WJP	MIRROR PROVISIONS - HOUSING, PAINTED
WJP	ORNAMENTATION EXT - EMBLEM, NAMEPLATE, BLACK, PACKAGE
WJP	TIRE ALL - 265/65R18 SL 114T AT VAR 2
WJP	TIRE ALL - 275/60R20 SL 115S BW AT
WJP	TIRE ALL - LT285/70R17 C 116/113Q BW OOR
WJP	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 8
WJP	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 7
WJP	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 10
WJU	ACCESSORY - ASSIST STEPS - BLACK
WJU	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
WJU	ACCESSORY - EXHAUST TIP - DESIGN 2
WJU	ACCESSORY - FLOOR LINER - CONTOURED
WJU	ACCESSORY - WHEEL - 20 X 9 - J - ALUMINUM - DESIGN 1
WJU	STEPS, RUNNINGBOARD - SIDE, NONE
WJU	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 13
WJU	SALES PACKAGE - BLACK
WKC	ACCESSORY - ASSIST STEPS - BLACK
WKC	ACCESSORY - ASSIST STEPS - REMOVABLE
WKC	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
WKC	ACCESSORY - LAMPS - FRONT ROOF MOUNTED - OFF-ROAD
WKC	ACCESSORY - POWER DISTRIBUTION BOX
WKC	ACCESSORY - SPORT BAR - BED MOUNTED - DESIGN 1
WKC	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 8
WLD	WINDOW CONTROL - REMOTE EXPRESS DOWN, ALL WINDOWS
WMI	SHUTTERS - FRONT GRILLE, ACTIVE, UPR AND LWR
WNO	VIN MODEL YEAR - 2026
WPC	ADJUSTER PASS ST - 6WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT
WPC	ARM REST - RR SEAT, CENTER
WPC	CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE
WPC	COMPARTMENT - STOWAGE TAILGATE
WPC	EQUIPMENT - ASSIST, OPEN & CLOSE, TAILGATE

RPO	Description
WPC	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
WPC	INTERIOR TRIM CONFIG - LEATHER, LEVEL 3, JET BLACK / SIGNET
WPC	LAMP - INTR, FRT HEADER, COURTESY & DUAL READING
WPC	LAMP FRT FOG - FRT FOG, LED
WPC	LOCK CYLINDER - RR COMPT
WPC	LUMBAR PASSENGER - SEAT, POWER, 2 WAY
WPC	MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
WPC	MIRROR I/S R/V - LT SENSITIVE
WPC	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
WPC	POCKET - FRONT SEAT BACK, DRIVER
WPC	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
WPC	RECEPTCL FRT CNSL RR - ELECTRICAL, 110 VOLT
WPC	RECPT USB FLR CNSL R - DUAL, CHARGE
WPC	REMOTE START - VEHICLE
WPC	STEERING COLUMN - TILT, TELESCOPING
WPC	STEERING WHEEL HEAT - AUTOMATIC
WPC	SUNSHADE - DRIVER, MIRROR, COVER, ILLUM, SLIDING, PASS, MIRROR, COVER, ILLUM, SLIDING
WPC	VENTILATED SEAT FRT - DRVR & PASS
WPC	SALES PACKAGE - COMFORT AND CONVENIENCE
WPL	ARM REST - RR SEAT, CENTER
WPL	INTERIOR TRIM CONFIG - VINYL, LEVEL 2, JET BLACK
WPL	POCKET - FRONT SEAT BACK, DRIVER
WPL	SALES PACKAGE - COLD WEATHER
WPL	SALES PACKAGE - DRIVER AWARENESS 1
WPL	SALES PACKAGE - LUXURY
WRT	WIRING PROVISIONS - AUXILIARY LAMPS
X31	ACCESSORY - LAMP KIT - OFF ROAD
X31	ACCESSORY - LAMPS - FRONT GRILLE MOUNTED - OFF-ROAD
X31	BUMPER FRT - BLACK
X31	EQUIPMENT - SUPPLIER INSTALLED
X31	PLATE - FRT UNDERBODY, SKID
X31	RELAY - AUX BATTERY (SEO)
X31	SWITCH - AUXILIARY POWER
X31	WIRING PROVISIONS - AUXILIARY LAMPS

RPO	Description
X31	APPEARANCE PACKAGE - GMC "X31 OFF ROAD"
XCQ	TIRE SPARE - 265/70R17 SL 115S BW SPR VAR1
XD5	ACCESSORY TIRE - TIRE ALL-275/50R22 SL 111T BW AL2
XDF	ACCESSORY TIRE - TIRE ALL - 275/60R20 SL 115S BW AT
XEV	ACCESSORY - FLOOR LINER - CONTOURED
XEV	ACCESSORY - POWER DISTRIBUTION BOX
XEV	ACCESSORY - SWITCH PLATE - INTERIOR
XEV	ACCESSORY - WHEEL FLARES
XEV	BUMPER - RR, VAR 1
XEV	BUMPER FRT - CHANNEL, STEEL, BLACK
XEV	CARRIER - BED MOUNTED, SPARE TIRE
XEV	EQUIPMENT - SUPPLIER INSTALLED
XEV	PLATE - SKID FRT
XEV	PLATE - SKID RR DIFFERENTIAL
XEV	PLATE - SKID TRANSFER CASE
XEV	PLATE - SKID, FUEL TANK
XEV	SALES PACKAGE - AT4X VARIANT
XEV	TIRE ALL - LT315/70R17 C 113/110 S BW OOR VAR1
XEV	TIRE SPARE - LT315/70R17 C 113/110 S BW OOR VAR 1
XEV	WHEEL - 17 X 8.5, J, ALUMINUM, DESIGN 8
XEV	WHEEL SPARE - 17 X 8.5, J, ALUMINUM, DESIGN 2
XEV	SALES PACKAGE - AEV VARIANT
XEW	ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 1
XEW	ALERT - SAFETY HAPTIC SEAT
XEW	AXLE - FRT ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
XEW	AXLE - RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
XEW	CHASSIS PACKAGE - HIGH WIDER PERFORMANCE, 4 X 4 SPORT
XEW	INDICATOR - TRAILER INFORMATION
XEW	INSULATION - FLR, ACOUSTICAL PKG, VAR. 2
XEW	INTERIOR TRIM - JET BLACK/CERAMIC WHITE
XEW	INTERIOR TRIM CONFIG - LEATHER, LEVEL 3.1, JET BLACK / CERAMIC WHITE
XEW	LINER - PUBX, SPRAY ON
XEW	MOLDING B/S UPPER - SPORT, WINDOW ALL AROUND

RPO	Description
XEW	SALES PACKAGE - COMFORT AND CONVENIENCE
XEW	SALES PACKAGE - DRIVER AWARENESS 3
XEW	SEAT BELT COLOR - RED (01)
XEW	STEPS, RUNNINGBOARD - PROTECTOR, ROCKER PANEL, BLACK
XEW	TIRE ALL - LT285/70R17 C 116/113Q BW OOR
XEW	TIRE SPARE - LT285/70R17 C 116/113Q BW OOR
XEW	VISION UNDERBODY - FORWARD AND REARWARD FACING
XEW	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 5
XEW	WINDOW SIDE FRT - LAMINATED, SOLAR GLAZING
XEW	SALES PACKAGE - AT4X VARIANT
XNF	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
XNF	ACCESSORY - PROTECTOR - ROCKER PANEL
XNF	ACCESSORY - SPORT BAR - BED MOUNTED - DESIGN 1
XNF	TIRE ALL - 275/60R20 SL 115S BW AT
XNF	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 19
XNF	SALES PACKAGE - NIGHTFALL EDITION
XTD	COVERING FRT - FLOOR MATS, CARPETED INSERT
XTD	COVERING REAR - FLOOR MATS, CARPETED INSERT
XTD	HANDLE O/S DOOR - BODY COLOR
XTD	HEATER SEAT FRT - DRVR & PASS
XTD	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
XTD	INSULATION - FLR, ACOUSTICAL PKG, VAR. 2
XTD	INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, VAR1, JET BLACK
XTD	LAMP - INTR, FRT HEADER, COURTESY & DUAL READING
XTD	LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS
XTD	MIRROR I/S R/V - LT SENSITIVE
XTD	MIRROR PROVISIONS - HOUSING, PAINTED
XTD	POCKET - FRONT SEAT BACK, PASS
XTD	RECPT USB FLR CNSL R - SINGLE, CHARGE
XTD	REMOTE START - VEHICLE
XTD	SALES PACKAGE - CONVENIENCE II

RPO	Description
XTD	STEERING COLUMN - TILT, TELESCOPING
XTD	SUNSHADE - DRIVER, MIRROR, COVER, ILLUM, SLIDING, PASS, MIRROR, COVER, ILLUM, SLIDING
XTD	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 1
XTD	WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN
XTE	ARM REST - RR SEAT, CENTER
XTE	CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE
XTE	HEADLAMPS - LED
XTE	INTERIOR TRIM CONFIG - VINYL, LEVEL 2, JET BLACK
XTE	LAMP - TAIL & STOP, SPECIAL
XTE	LAMP FRT FOG - FRT FOG, LED
XTE	LAMP SYSTEM - DAYTIME RUNNING, LED
XTE	POCKET - FRONT SEAT BACK, DRIVER
XTE	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
XTE	RECEPTCL FRT CNSL RR - ELECTRICAL, 110 VOLT
XTE	RECPT USB FLR CNSL R - DUAL, CHARGE
XTE	SALES PACKAGE - LT - 1
XTE	SALES PACKAGE - TECHNOLOGY
XTE	STEERING WHEEL HEAT - AUTOMATIC
Y19	ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
Y19	HEATER SEAT FRT - DRVR & PASS
Y19	LUMBAR DRIVER - SEAT, POWER, 2 WAY
Y19	SALES PACKAGE - COMFORT AND CONVENIENCE
Y19	SALES PACKAGE - COLD WEATHER
Y5D	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
Y5D	HEAD UP DISPLAY - WINDSHIELD
Y5D	ROOF - SUN, SINGLE GLASS, INR SLIDING, MAN SUNSHADE
Y5D	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
Y5D	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
Y5D	VISION - 360 VIEW, MONO, HD DIGITAL
Y5D	SALES PACKAGE - DRIVER AWARENESS 3
Y5W	PARK ASSIST - REAR
Y5W	REAR CROSS TRAFFIC - ALERT, BRAKING
Y5W	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW
Y5W	SALES PACKAGE - DRIVER AWARENESS 1
Y5X	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
Y5X	LOCK CYLINDER - RR COMPT
Y5X	SALES PACKAGE - DRIVER AWARENESS 1
Y5X	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
Y5X	VISION - 360 VIEW, MONO, HD DIGITAL
Y5X	SALES PACKAGE - DRIVER AWARENESS 2
YF5	CERTIFICATION - EMISSION, CALIFORNIA
Z2I	CHASSIS PACKAGE - 2 INCH LIFT
Z82	TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D.
ZL3	COMPARTMENT - STOWAGE TAILGATE
ZL3	CONSOLE - FRT COMPT, FLOOR, CUSTOM
ZL3	CRUISE CONTROL - AUTOMATIC, ELECTRONIC
ZL3	DEFOGGER - RR WINDOW, ELECTRIC
ZL3	EQUIPMENT - ASSIST, OPEN & CLOSE, TAILGATE
ZL3	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
ZL3	LOCK CONTROL RR CMPT - TAILGATE, REM CONT ELEC OPEN/CLOSE
ZL3	LOCK CYLINDER - RR COMPT
ZL3	SUNSHADE - DRIVER, MIRROR, COVER, ILLUM, SLIDING, PASS, MIRROR, COVER, ILLUM, SLIDING
ZL3	WINDOW RR - FULL WIDTH, SLIDING, MANUAL
ZL4	ARM REST - RR SEAT, CENTER
ZL4	CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE
ZL4	HEADLAMPS - LED
ZL4	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK / ARTEMIS
ZL4	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1.0, JET BLACK / ADRENALINE RED
ZL4	INTERIOR TRIM CONFIG - VINYL, LEVEL 2, JET BLACK
ZL4	LAMP - TAIL & STOP, SPECIAL
ZL4	LAMP SYSTEM - DAYTIME RUNNING, LED
ZL4	MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION

RPO	Description
ZL4	POCKET - FRONT SEAT BACK, DRIVER
ZL4	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
ZL4	RECEPTCL FRT CNSL RR - ELECTRICAL, 110 VOLT
ZL4	RECPT USB FLR CNSL R - DUAL, CHARGE
ZL4	SALES PACKAGE - CONVENIENCE II
ZL4	STEERING WHEEL HEAT - AUTOMATIC
ZL4	VENTILATED SEAT FRT - DRVR & PASS
ZL4	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 11
ZL6	AXLE POSITRACTION - LIMITED SLIP
ZL6	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
ZL6	INDICATOR - TRAILER INFORMATION
ZL6	TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D.
ZL6	SALES PACKAGE - TRAILER INTEGRATION
ZR2	CHASSIS PACKAGE - HIGH WIDER PERFORMANCE, 4 X 4 SPORT

Section 1

Body Systems

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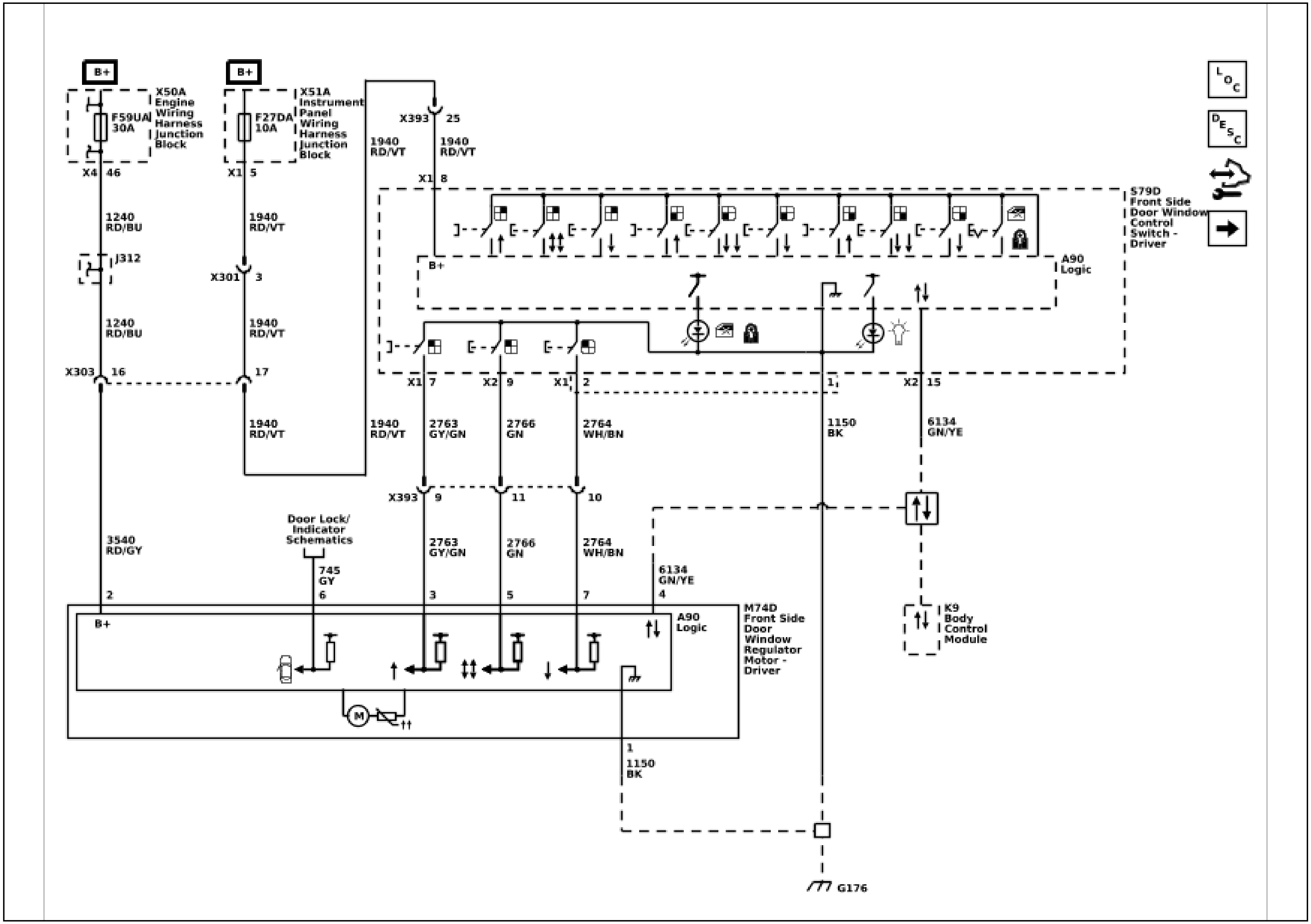
Body Systems

Fixed and Moveable Windows

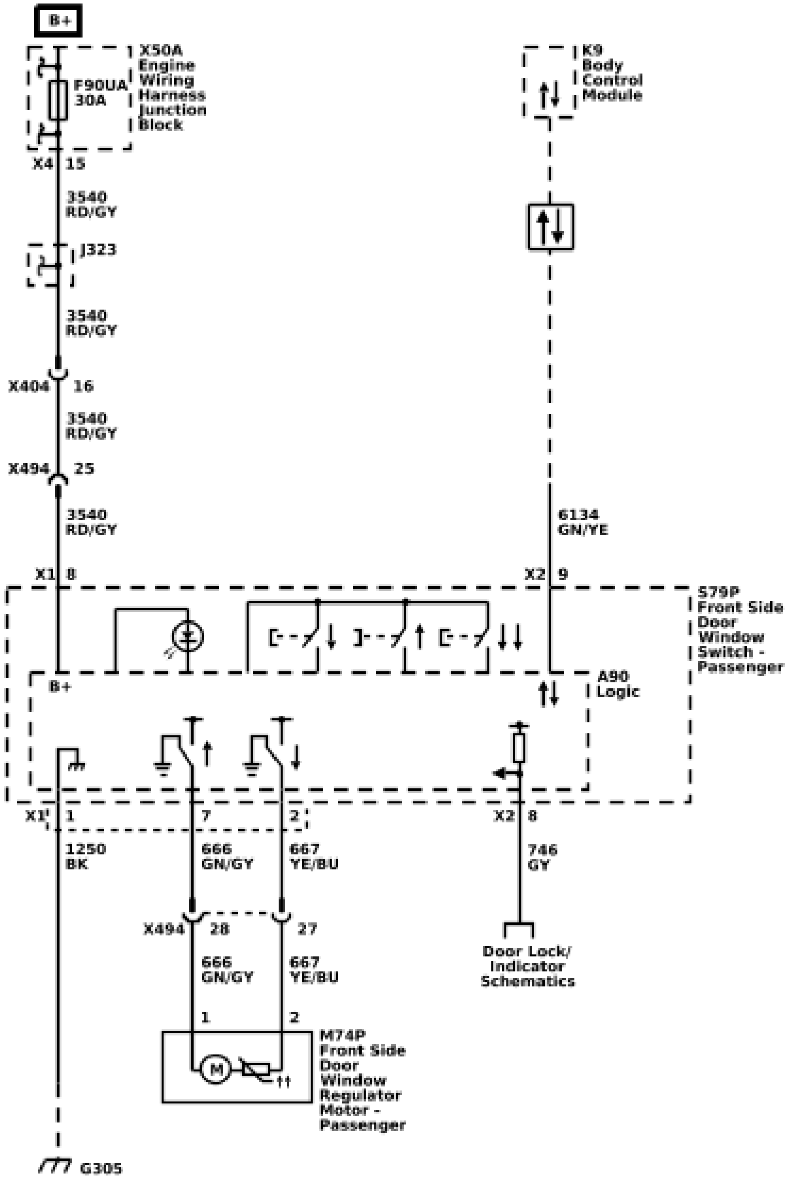
Schematic and Routing Diagrams

Moveable Window Schematics (Driver Window)


B+
X50A Engine Wiring Harness Junction Block
F59UA 30A
X4 46
1240 RD/BU
J312
X303 16
3540 RD/GY
B+
X51A Instrument Panel Wiring Harness Junction Block
F27DA 10A
X1 5
1940 RD/VT
X301 3
17
X393 25
X1 8
B+
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 7
X2 9
X1 2
1
X2 15
2763 GY/GN
2766 GN
2764 WH/BN
1150 BK
6134 GN/YE
X393 9
11
10
Door Lock/ Indicator Schematics
745 GY
6
2
3
5
7
4
M74D Front Side Door Window Regulator Motor - Driver
M
K9 Body Control Module
G176

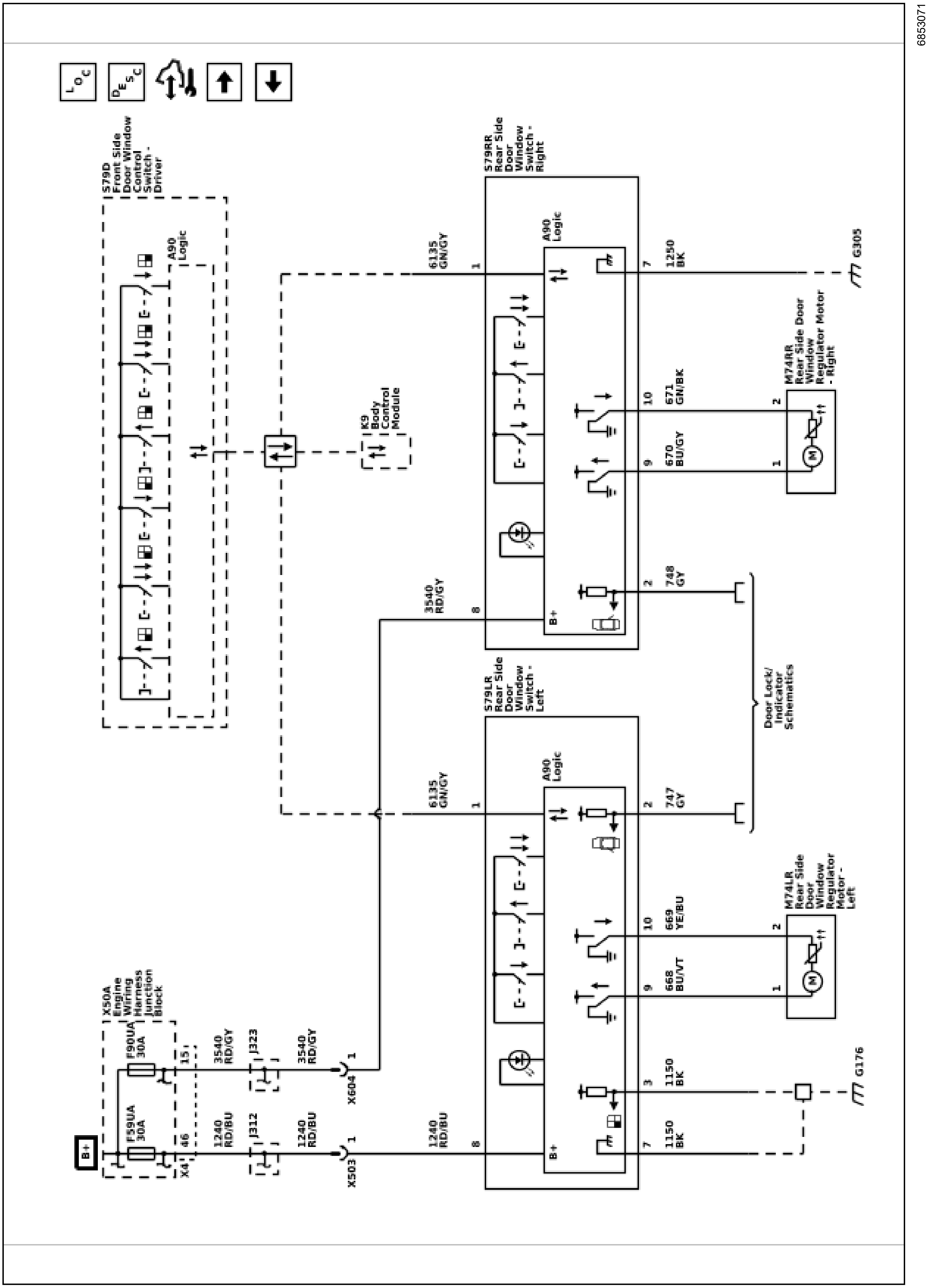
6853069

Moveable Window Schematics (Passenger Window)

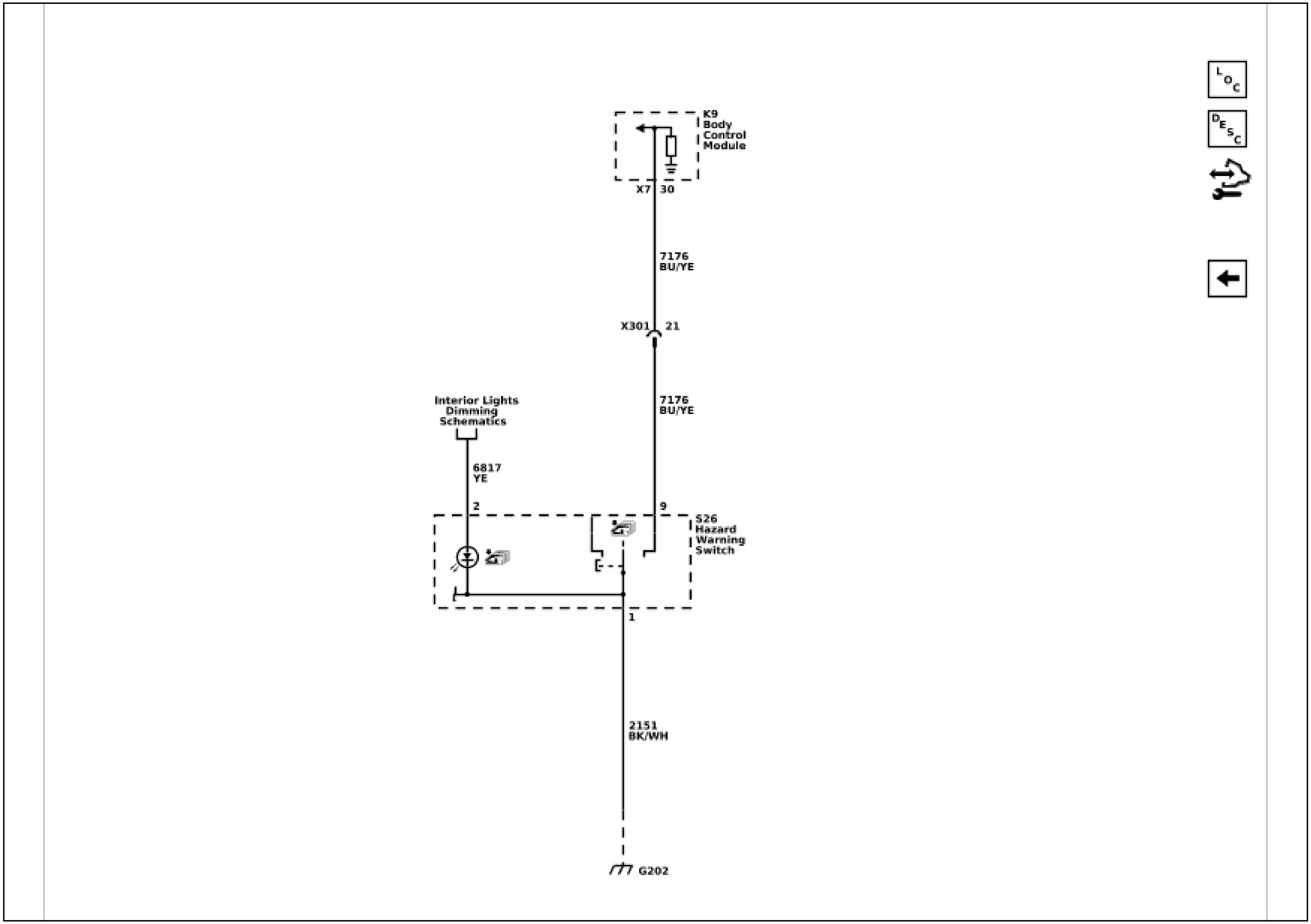

B+
X50A
Engine
Wiring
Harness
Junction
Block
F90UA
30A
X4 15
3540
RD/GY
J323
3540
RD/GY
X404 16
3540
RD/GY
X494 25
3540
RD/GY
X1 8
B+
K9
Body
Control
Module
6134
GN/YE
X2 9
S79P
Front Side
Door
Window
Switch -
Passenger
A90
Logic
X1 1
1250
BK
7
666
GN/GY
2
667
YE/BU
X2 8
746
GY
X494 28
27
666
GN/GY
667
YE/BU
Door Lock/
Indicator
Schematics
1
2
M
M74P
Front Side
Door
Window
Regulator
Motor -
Passenger
G305

6853070

Moveable Window Schematics (Rear windows)

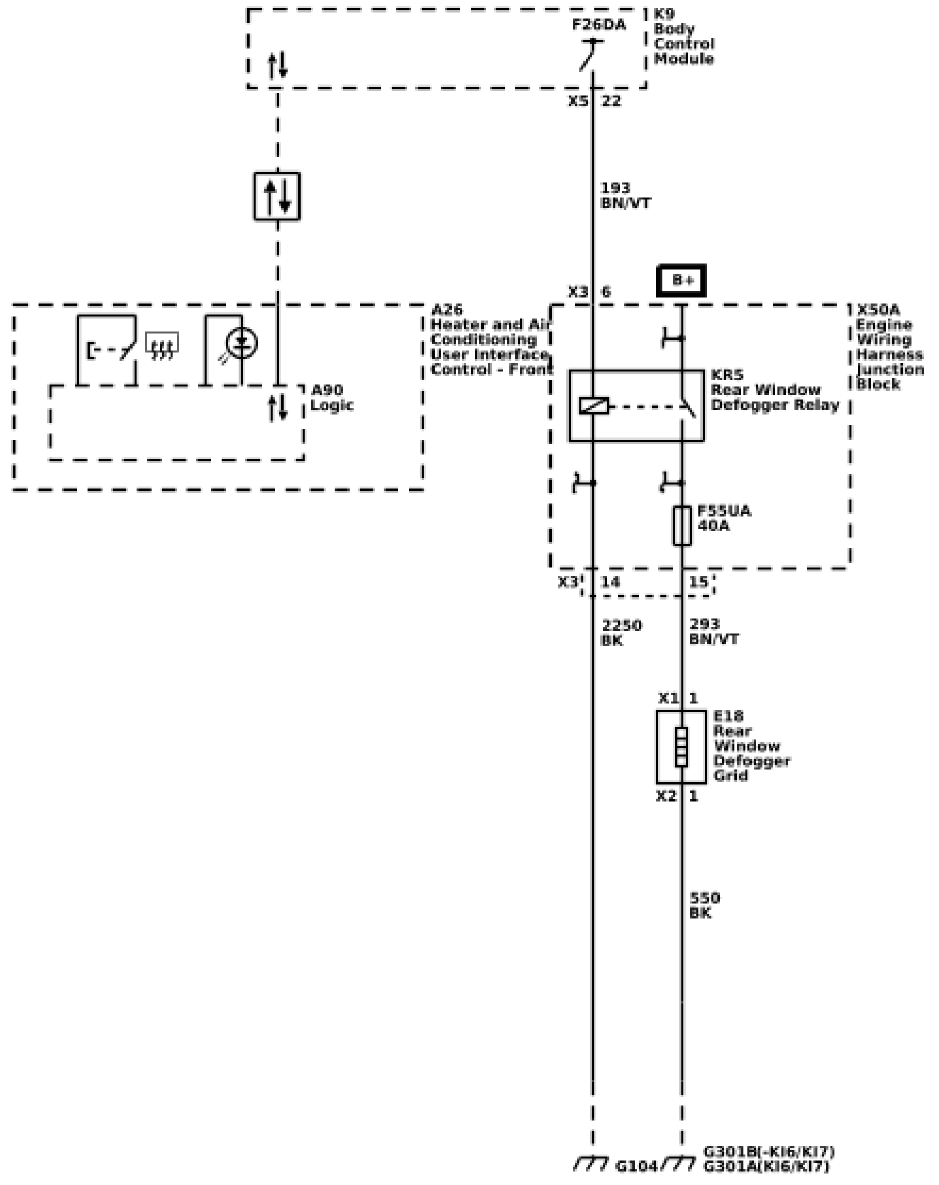

6853071
LOC
DESC
S79D Front Side Door Window Control Switch - Driver
A90 Logic
K9 Body Control Module
S79RR Rear Side Door Window Switch - Right
S79LR Rear Side Door Window Switch - Left
M74RR Rear Side Door Window Regulator Motor - Right
M74LR Rear Side Door Window Regulator Motor - Left
X50A Engine Wiring Harness Junction Block
F90UA 30A
F59UA 30A
B+
X4
15
46
J323
J312
X604
X503
3540 RD/GY
1240 RD/BU
6135 GN/GY
1250 BK
671 GN/BK
670 BU/GY
748 GY
747 GY
669 YE/BU
668 BU/VT
1150 BK
G305
G176
Door Lock/ Indicator Schematics
M
1
2
3
7
8
9
10

Moveable Window Schematics (Global Window Express Down Switch (WLD))


K9
Body
Control
Module
X7
30
7176
BU/YE
X301
21
7176
BU/YE
Interior Lights
Dimming
Schematics
6817
YE
2
9
S26
Hazard
Warning
Switch
1
2151
BK/WH
G202

6853072

Defogger Schematics (Defogger)


F26DA
K9
Body
Control
Module
X5 22
193
BN/VT
X3 6
B+
A26
Heater and Air
Conditioning
User Interface
Control - Front
A90
Logic
X50A
Engine
Wiring
Harness
Junction
Block
KR5
Rear Window
Defogger Relay
F55UA
40A
X3 14
15
2250
BK
293
BN/VT
X1 1
E18
Rear
Window
Defogger
Grid
X2 1
550
BK
G104
G301B(-KI6/KI7)
G301A(KI6/KI7)
6852974

Description and Operation

Power Windows Description and Operation

Power Windows System Components

The power window system consists of the following components:

- Driver front side door window control switch
- Passenger front side door window control switch
- Left rear side door window switch
- Right rear side door window switch
- Global window down switch
- Window motors in each of the doors
- Body control module (BCM)

Driver Express Up and Express Down Power Window Motors

The driver door contains a smart window motor that will detect excessive resistance while performing the express up function and automatically reverse direction to prevent injury to any occupants that may become trapped between the closing window and the door frame. The automatic reverse safety feature can be overridden by pulling and holding the window switch.

The logic circuit within the window motor monitors the up, down and express signal circuits which are normally equal to B+ voltage. When a switch is used on the front side door window control switch, the contacts close causing a voltage drop within the appropriate signal circuit. The window motor will detect the voltage drop and will command the window to move in the direction requested.

The driver front side door window control switch communicates to the BCM by a serial data circuit. When the driver wishes to control the passenger windows, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting the passenger window motor command, the BCM will then send a serial data message to the passenger window motor which will then move in the direction requested.

Passenger, Left Rear, Right Rear Express Down Window Motors

For the passenger, and rear doors, when their window switch is pressed in the down position, battery positive voltage is applied to their respective window motor control circuit and ground to the other window motor control circuit causing that window to open. When the individual window switch is pulled in the up position, voltage and ground is applied to the window motor in the opposite direction causing that window to close. The return path to ground is supplied through the inactive control circuit being normally grounded through the window switch.

Each of the passenger window switches communicates to the BCM by a serial data circuit. When the driver wishes to control the left rear or right rear window, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting a window motor command, the BCM will then send a serial data message to the appropriate rear side door window switch which will then command that window to move in the direction requested.

Window Lockout

This feature stops the rear passenger window switches from working.

There is a button on the infotainment display used to enable or disable this feature.

Rear Window Defogger Description and Operation

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- Body Control Module
- Front Heater and Air Conditioning User Interface Control
- Engine Wiring Harness Junction Block (Contains PCB Rear Defogger Relay)
- Rear Defogger Grid
- 40A Fuse

Rear Window Defogger Operation

The rear defog control system utilizes a single zone backlight design, driven with a single relay configuration. A switch for the customer to control the system is provided within the front heater and air conditioning user interface control. Also included in the front heater and air conditioning user interface control is an indicator to inform the customer with the current state of the system. The system is only operational when engine is running or during remote start.

Pressing the heated rear window switch causes the front heater and air conditioning user interface control to send a serial data message to the body control module requesting rear window defog operation. The body control module upon receipt of the serial data message will provide voltage to the coil side of the rear defogger relay, this will energize the relay causing the relay switch contacts to close allowing B+ voltage to flow through the rear defogger grid control circuit to the rear defogger grid.

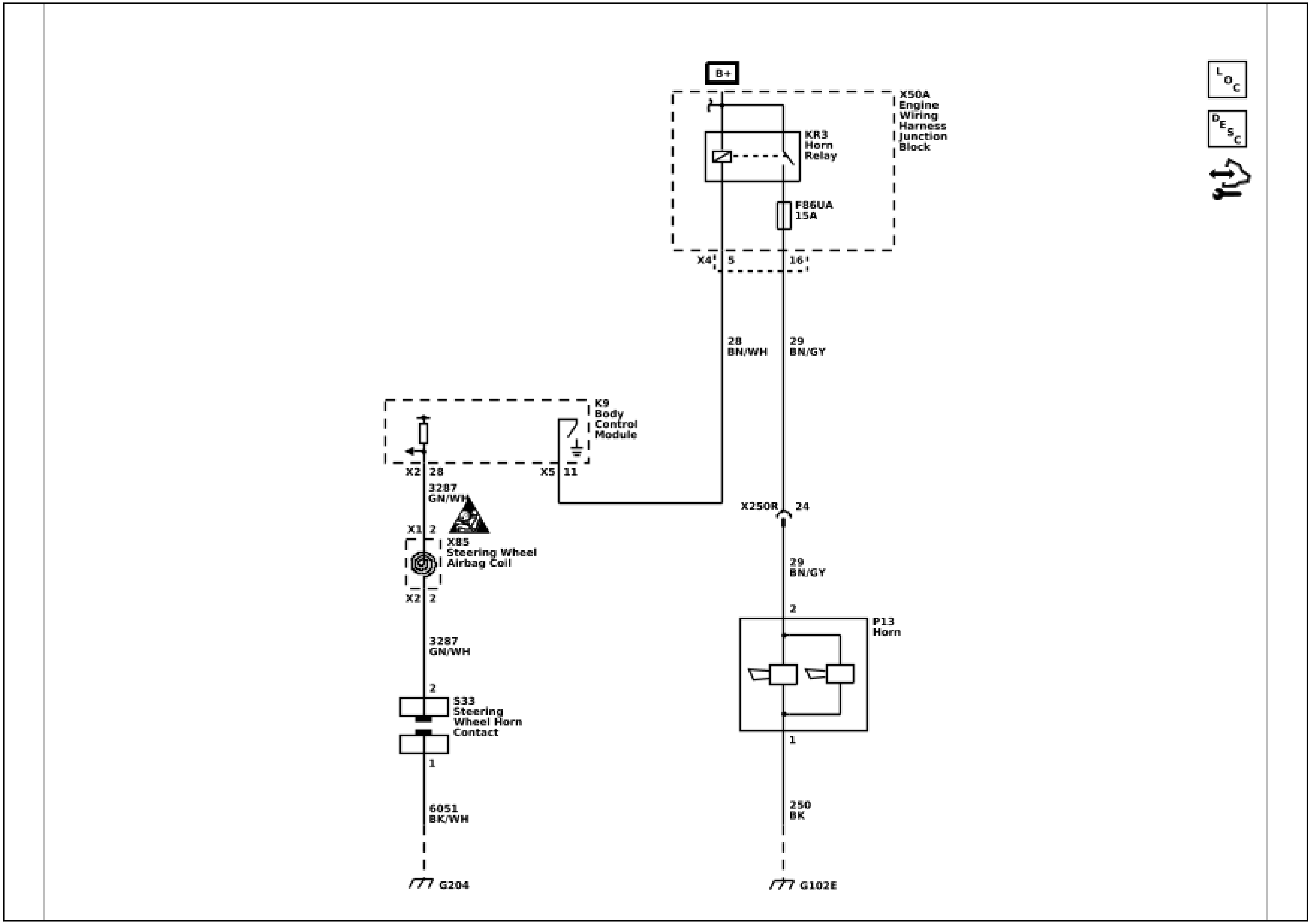
The rear window defogger grid is split into three sections on vehicles equipped with a sliding rear window. The left and right rear window grids are connected to the main E18 Rear Window Defogger Grid X1 and X2 connectors through internal wiring within the rear sliding window assembly. The center sliding window connects to the rest of the E18 Rear Window Defogger Grid through a wiring connector that is hard-wired into the rear sliding window assembly.

When the rear heated rear window switch is pressed and the engine is running, the rear window defogger grid will activate and will turn off automatically depending upon the vehicle speed (refer to owner’s manual for rear window defogger operation cycles)

Horns and Pedestrian Alerts

Schematic and Routing Diagrams

Horn Schematics (Horns)


LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
KR3 Horn Relay
F86UA 15A
X4 5
16
28 BN/WH
29 BN/GY
K9 Body Control Module
X2 28
X5 11
X250R 24
3287 GN/WH
X1 2
X85 Steering Wheel Airbag Coil
X2 2
29 BN/GY
2
P13 Horn
1
3287 GN/WH
2
S33 Steering Wheel Horn Contact
1
6051 BK/WH
250 BK
G204
G102E

6853046

Description and Operation

Horns System Description and Operation

System Description

The horn system consists of the following components:

- HORN fuse
- Engine wiring harness junction block (contains horn PCB relay)
- Steering wheel horn contact
- Steering wheel airbag coil
- Horn
- Body control module (BCM)

System Operation

The vehicle horn system is activated under the following conditions:

- When the horn switch is depressed
- The BCM commands the horns ON under any of the following conditions:
  - When the content theft deterrent system detects a vehicle intrusion.
  - When the panic button is depressed on the remote control door lock transmitter—For further information refer to *Keyless Entry System Description and Operation 9-32*.
  - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to *Keyless Entry System Description and Operation 9-32*.
  - When the OnStar® system is used to sound the horns if equipped—For further information, refer to *OnStar Description and Operation 4-12*.

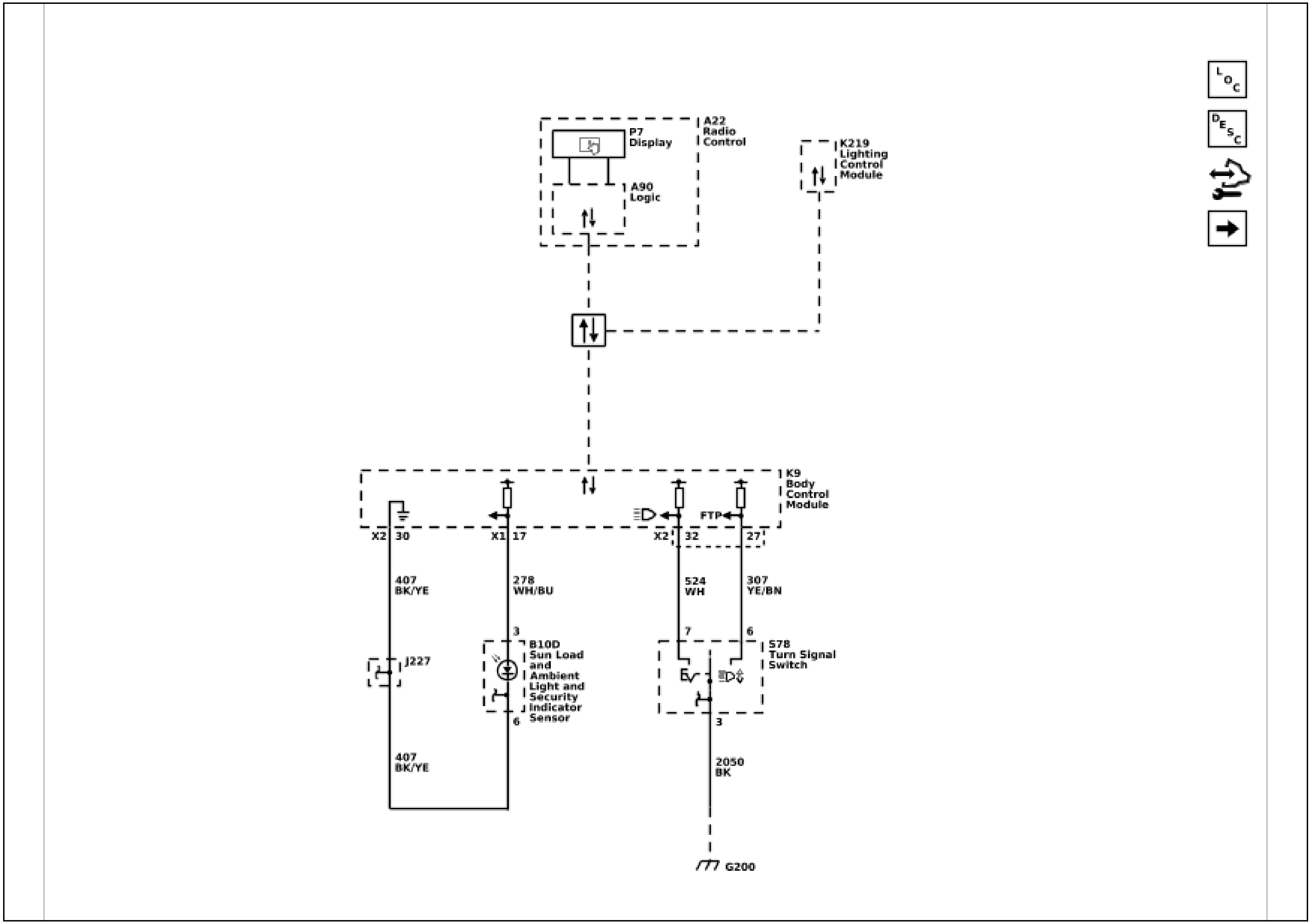
Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing either of the horn switches applies ground to the horn relay control circuit. The BCM may also apply ground to the horn relay control circuit as described above. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horns through the horn control circuit. The horns sound as long as ground is applied to the horn relay control circuit.

Lighting

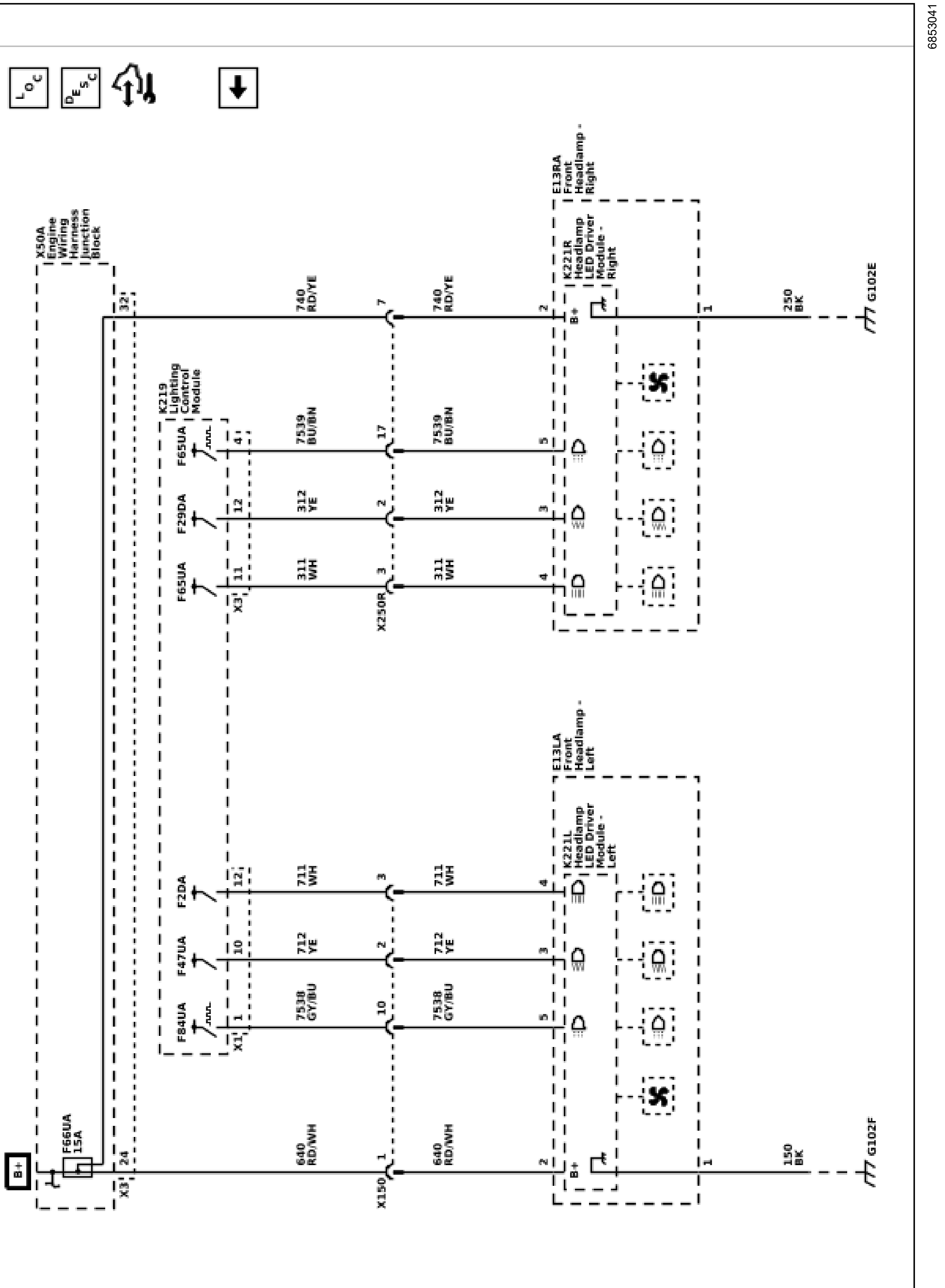
Schematic and Routing Diagrams

Headlights/Daytime Running Lights (DRL) Schematics (Controls and Indicators)

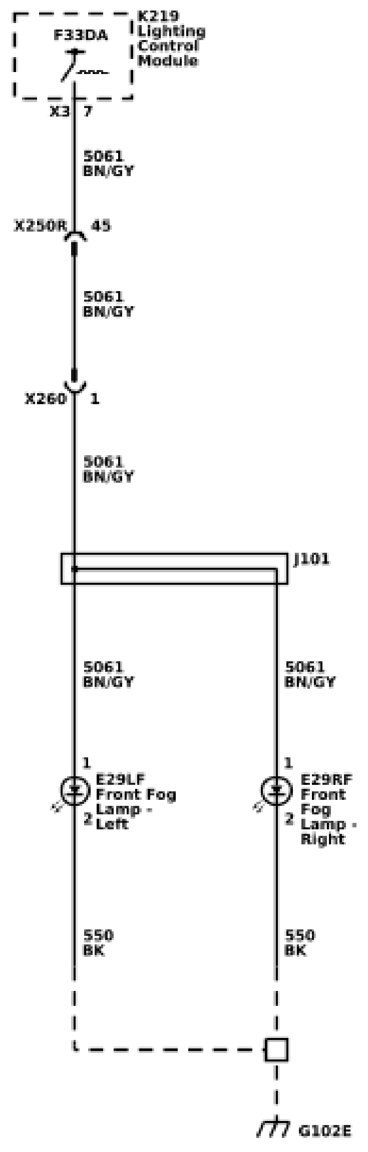

A22
Radio
Control
P7
Display
A90
Logic
K219
Lighting
Control
Module
K9
Body
Control
Module
FTP
X2 30
X1 17
X2 32
27
407
BK/YE
278
WH/BU
524
WH
307
YE/BN
3
7
6
J227
B10D
Sun Load
and
Ambient
Light and
Security
Indicator
Sensor
6
S78
Turn Signal
Switch
3
407
BK/YE
2050
BK
G200

6853040

Headlights/Daytime Running Lights (DRL) Schematics (Low Beam, High Beam, and Daytime Running Lights)

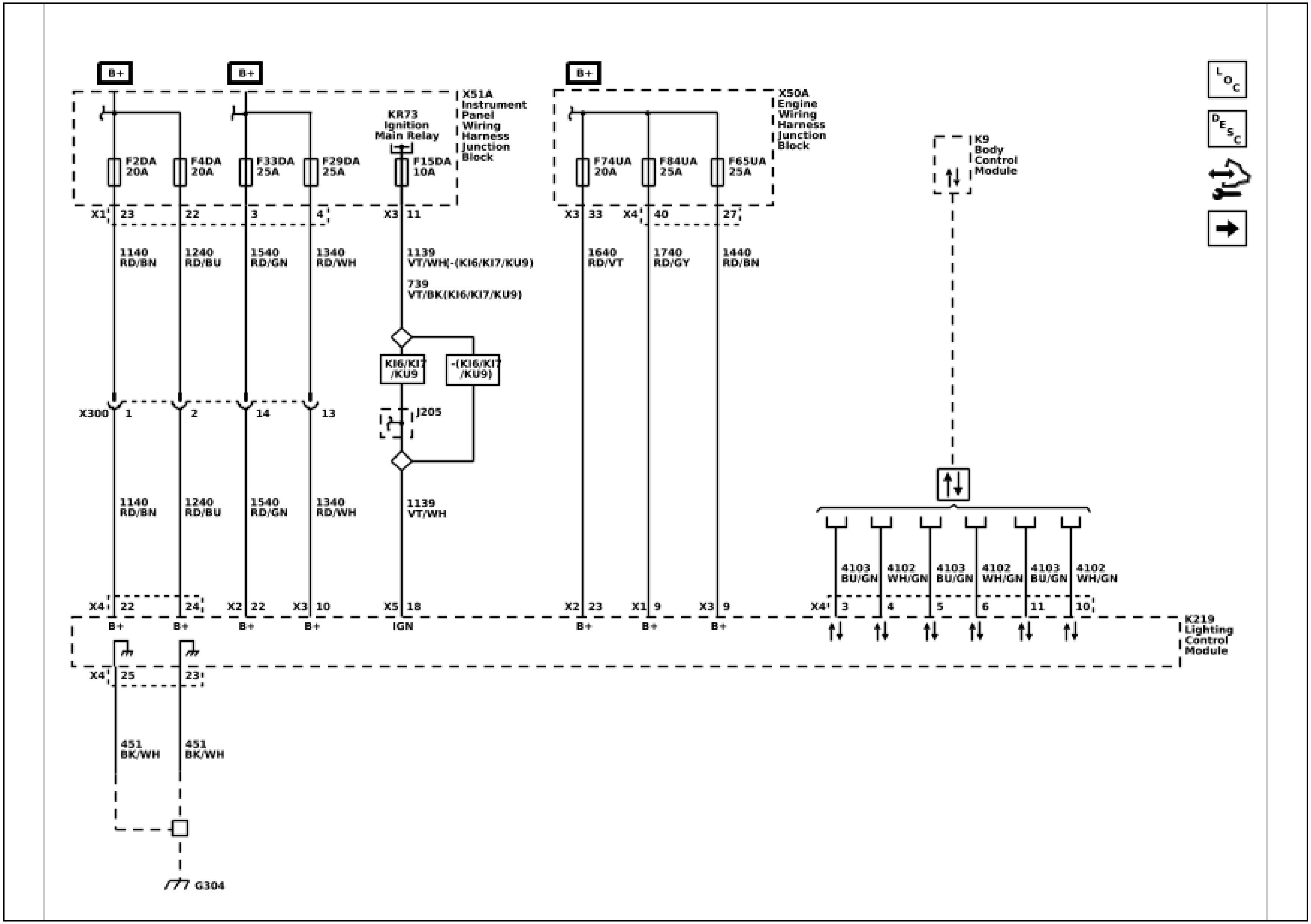

6853041
B+
F66UA 15A
X50A Engine Wiring Harness Junction Block
X3
24
32
640 RD/WH
740 RD/YE
X150
1
7
X250R
K219 Lighting Control Module
F84UA
F47UA
F2DA
F65UA
F29DA
F65UA
X1
1
10
12
X3
11
12
4
7538 GY/BU
712 YE
711 WH
311 WH
312 YE
7539 BU/BN
10
2
3
3
2
17
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
B+
2
5
3
4
1
150 BK
250 BK
G102F
G102E

Fog Lights Schematics (Fog Lamps (T40))


K219
Lighting
Control
Module
F33DA
X3 7
5061
BN/GY
X250R 45
5061
BN/GY
X260 1
5061
BN/GY
J101
5061
BN/GY
5061
BN/GY
1
E29LF
Front Fog
Lamp -
Left
2
1
E29RF
Front
Fog
Lamp -
Right
2
550
BK
550
BK
G102E

6853024

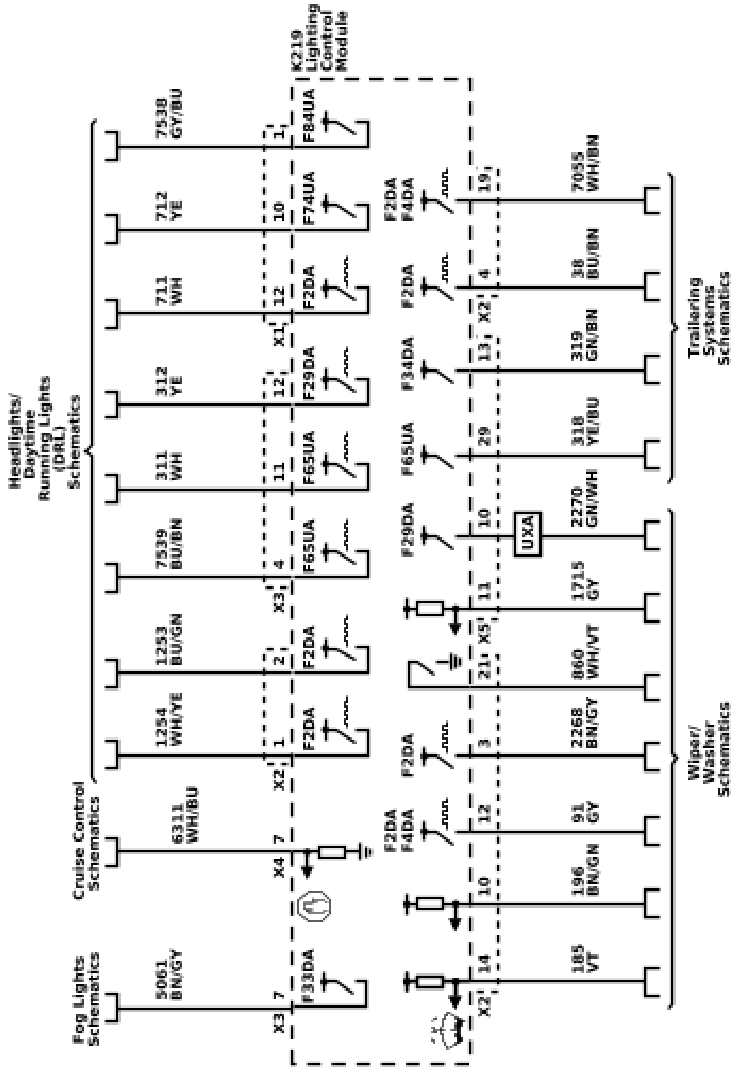
Exterior Lights Schematics (Lighting Control Module Power, Ground, and Serial Data)


B+
B+
B+
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F2DA 20A
F4DA 20A
F33DA 25A
F29DA 25A
F15DA 10A
X1 23
22
3
4
X3 11
1140 RD/BN
1240 RD/BU
1540 RD/GN
1340 RD/WH
1139 VT/WH(-(KI6/KI7/KU9)
739 VT/BK(KI6/KI7/KU9)
KI6/KI7 /KU9
-(KI6/KI7 /KU9)
J205
X300 1
2
14
13
1139 VT/WH
X50A Engine Wiring Harness Junction Block
F74UA 20A
F84UA 25A
F65UA 25A
X3 33
X4 40
27
1640 RD/VT
1740 RD/GY
1440 RD/BN
K9 Body Control Module
4103 BU/GN
4102 WH/GN
X4 22
24
X2 22
X3 10
X5 18
IGN
X2 23
X1 9
X3 9
X4 3
4
5
6
11
10
K219 Lighting Control Module
X4 25
23
451 BK/WH
G304
L O C
D E S C

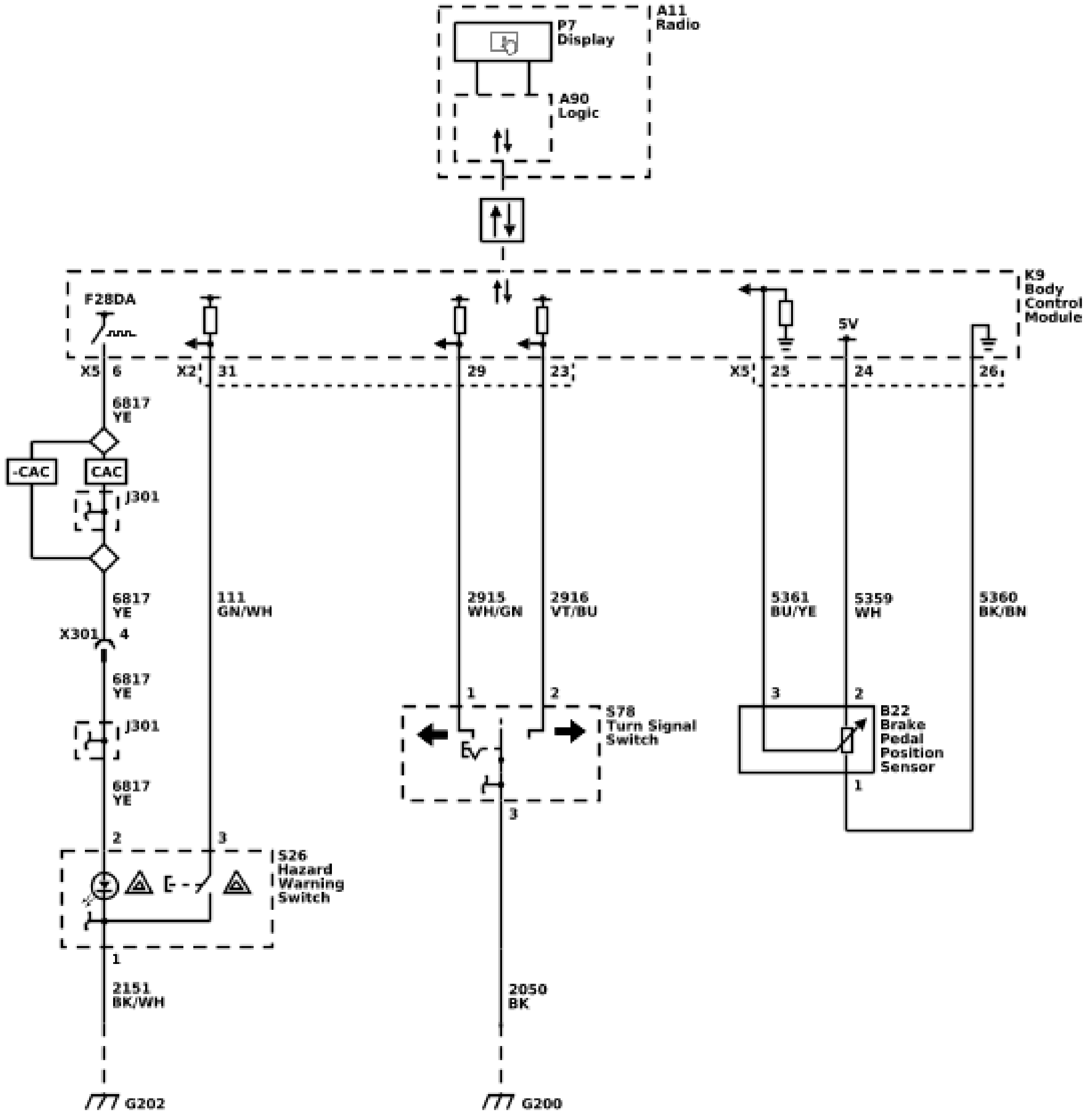
6853015

6853016

Exterior Lights Schematics (Lighting Control Module Subsystem References)


Fog Lights Schematics
5061 BN/GY
X3 7
F33DA
Cruise Control Schematics
6311 WH/BU
X4 7
Headlights/ Daytime Running Lights (DRL) Schematics
1254 WH/YE
X2 1
F2DA
1253 BU/GN
2
F2DA
7539 BU/BN
X3 4
F65UA
311 WH
11
F65UA
312 YE
12
F29DA
711 WH
X1 12
F2DA
712 YE
10
F74UA
7538 GY/BU
1
F84UA
K219 Lighting Control Module
X2 14
185 VT
10
196 BN/GN
F2DA F4DA
12
91 GY
F2DA
3
2268 BN/GY
21
860 WH/VT
X5 11
1715 GY
F29DA
10
UXA
2270 GN/WH
F65UA
29
318 YE/BU
F34DA
13
319 GN/BN
F2DA
X2 4
38 BU/BN
F2DA F4DA
19
7055 WH/BN
Wiper/ Washer Schematics
Trailering Systems Schematics

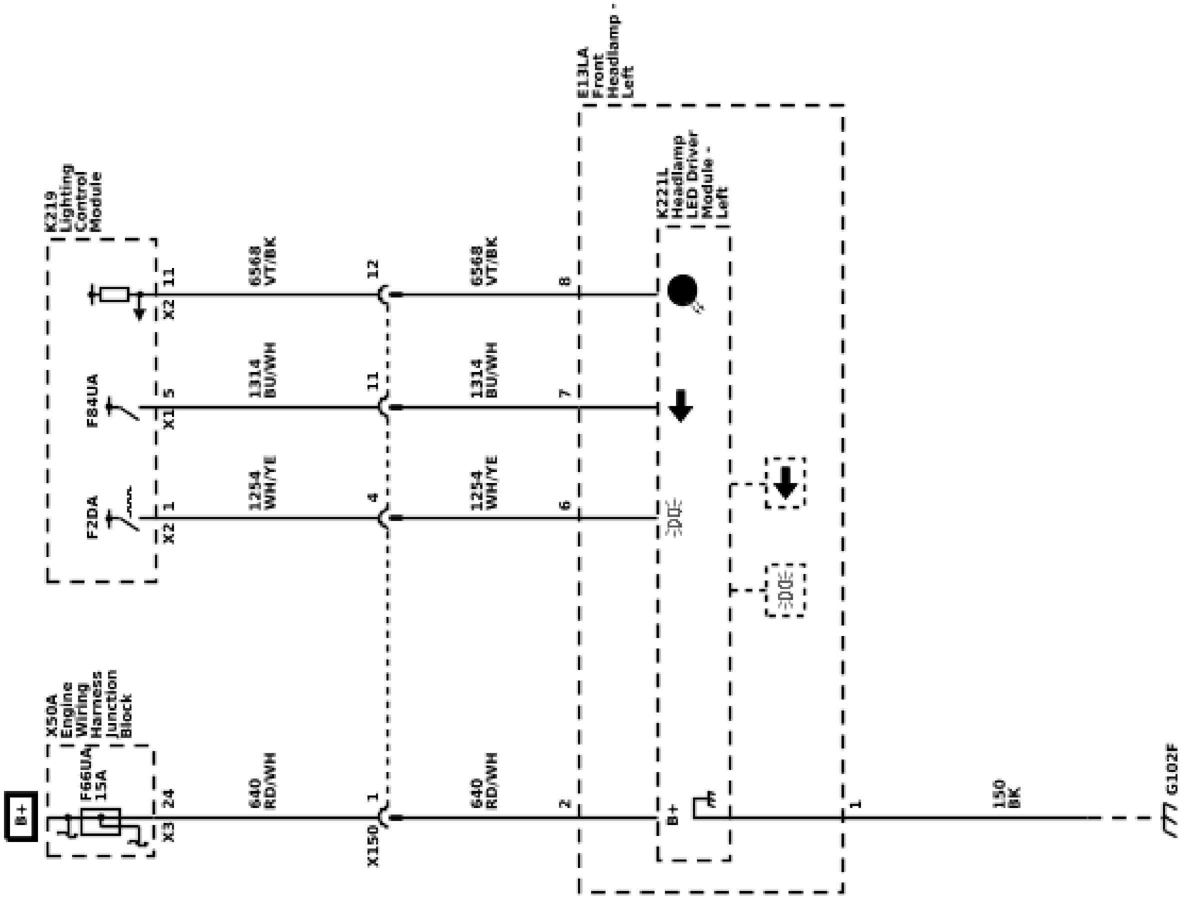
Exterior Lights Schematics (Exterior Light Controls and Indicators)


A11 Radio
P7 Display
A90 Logic
K9 Body Control Module
F28DA
X5 6
X2 31
29
23
X5 25
5V
24
26
6817 YE
-CAC
CAC
J301
6817 YE
X301 4
6817 YE
J301
6817 YE
111 GN/WH
2915 WH/GN
2916 VT/BU
5361 BU/YE
5359 WH
5360 BK/BN
1
2
S78 Turn Signal Switch
3
2
B22 Brake Pedal Position Sensor
1
2
3
S26 Hazard Warning Switch
1
2151 BK/WH
2050 BK
G202
G200

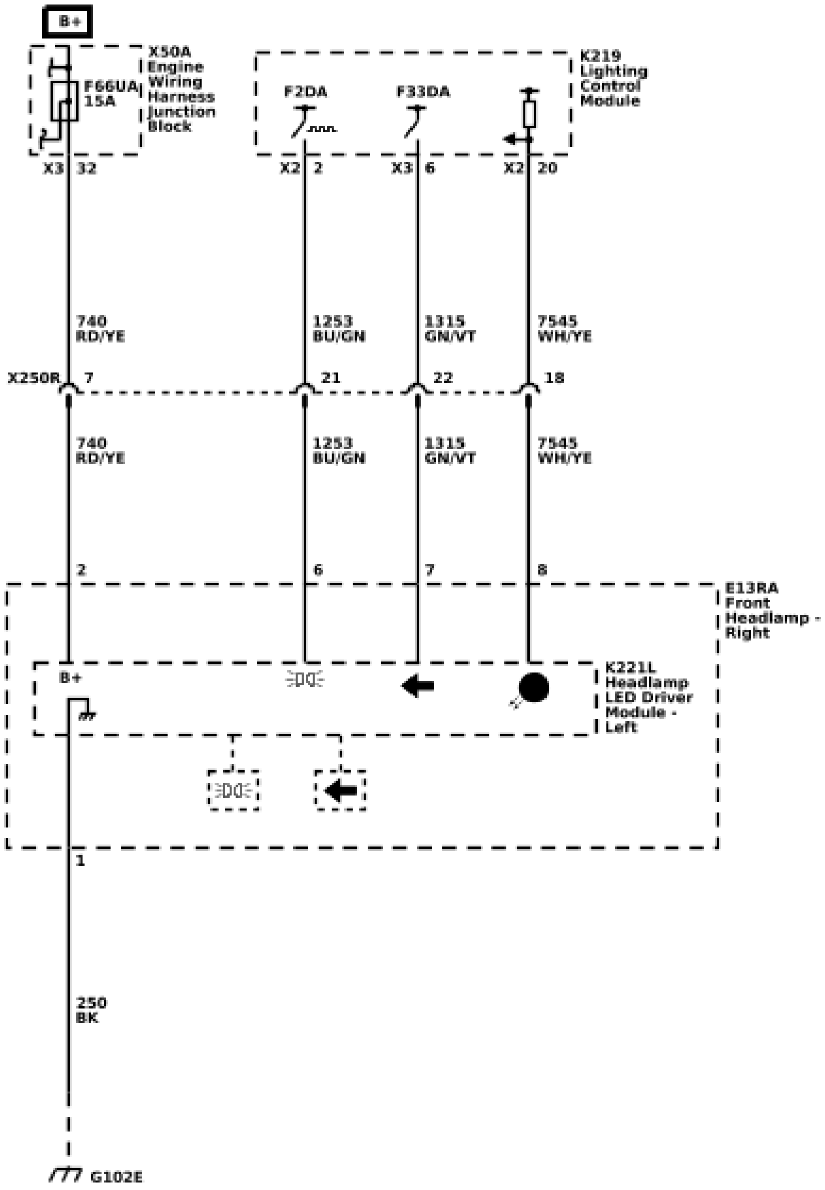
6853017

Exterior Lights Schematics (Front Left Turn and Park Lamps)

6853018

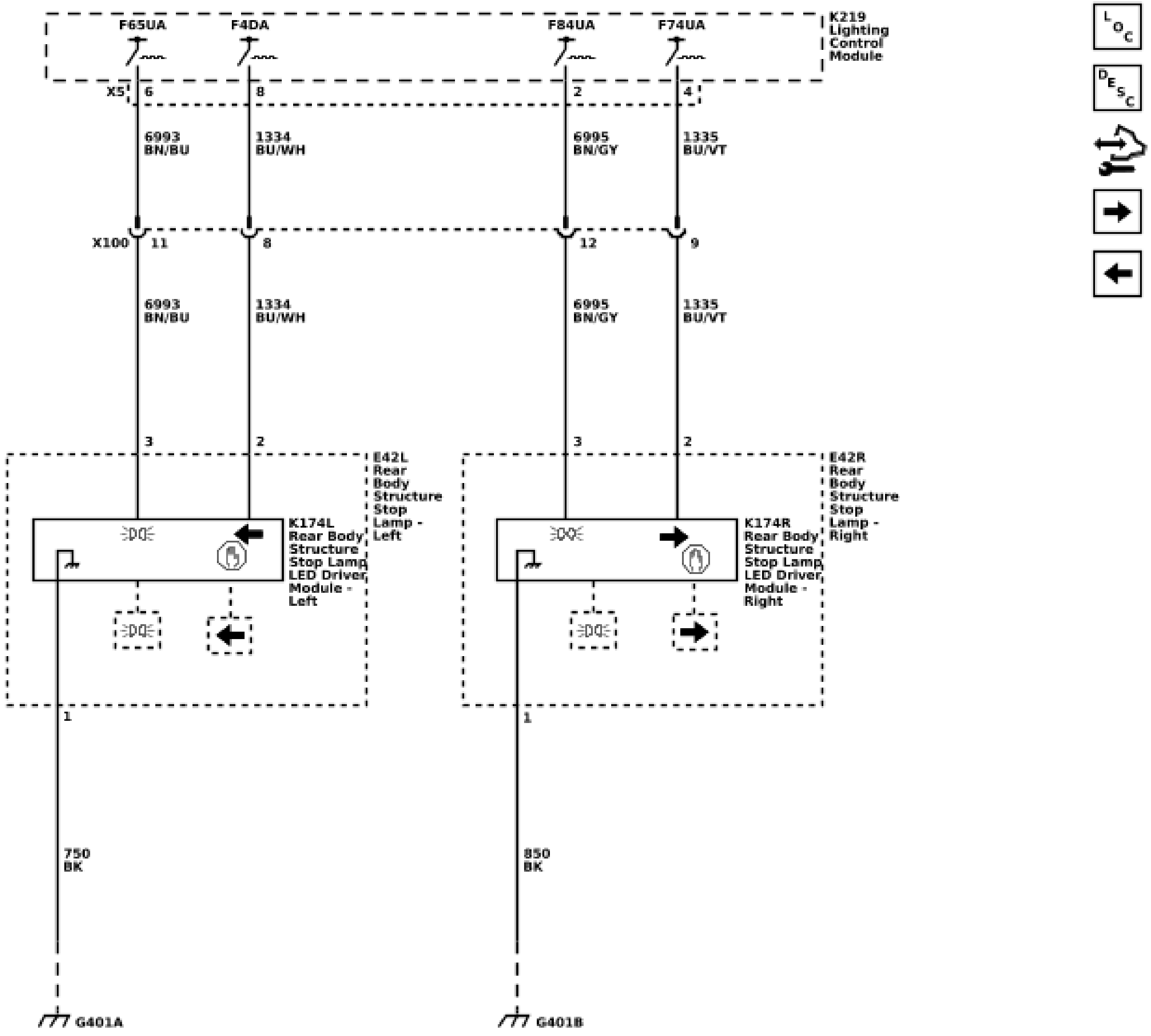

B+
X50A Engine Wiring Harness Junction Block
F66UA 15A
X3 24
K219 Lighting Control Module
F2DA
X2 1
F84UA
X1 5
X2 11
640 RD/WH
1254 WH/YE
1314 BU/WH
6568 VT/BK
X150
1
4
11
12
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
2
6
7
8
B+
1
150 BK
G102F

Exterior Lights Schematics (Front Right Turn and Park Lamps)

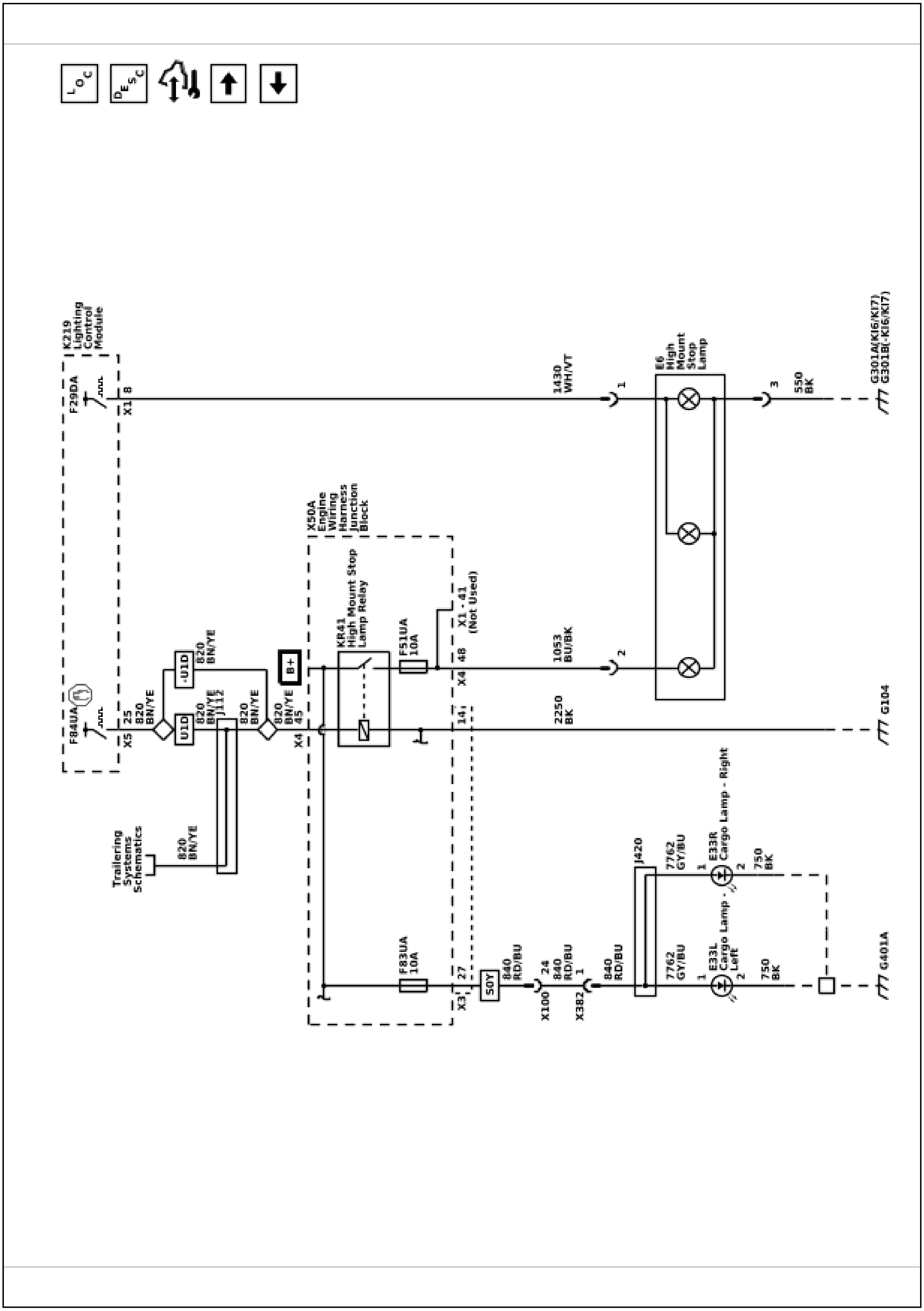

B+
X50A Engine Wiring Harness Junction Block
F66UA 15A
X3 32
740 RD/YE
X250R 7
740 RD/YE
2
K219 Lighting Control Module
F2DA
F33DA
X2 2
X3 6
X2 20
1253 BU/GN
1315 GN/VT
7545 WH/YE
21
22
18
1253 BU/GN
1315 GN/VT
7545 WH/YE
6
7
8
E13RA Front Headlamp - Right
K221L Headlamp LED Driver Module - Left
B+
1
250 BK
G102E

6853019

Exterior Lights Schematics (Rear Body Structure Stop, Turn, and Running Lamps)

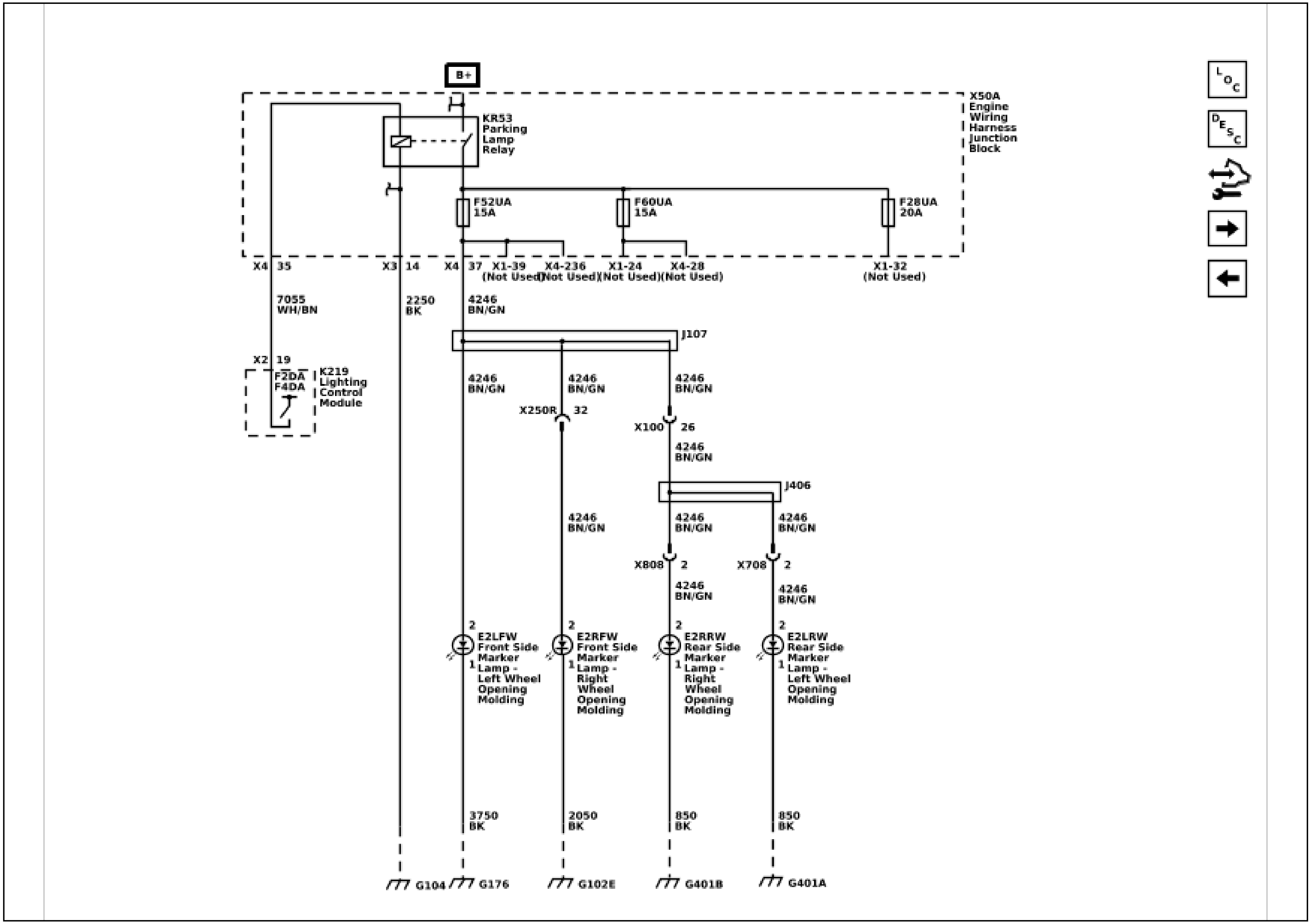

K219 Lighting Control Module
F65UA
F4DA
F84UA
F74UA
X5
6
8
2
4
6993 BN/BU
1334 BU/WH
6995 BN/GY
1335 BU/VT
X100
11
8
12
9
6993 BN/BU
1334 BU/WH
6995 BN/GY
1335 BU/VT
3
2
3
2
E42L Rear Body Structure Stop Lamp - Left
K174L Rear Body Structure Stop Lamp LED Driver Module - Left
E42R Rear Body Structure Stop Lamp - Right
K174R Rear Body Structure Stop Lamp LED Driver Module - Right
1
1
750 BK
850 BK
G401A
G401B
6853020

Exterior Lights Schematics (Center High Mount Stop and Cargo Lamps)



6853021
K219 Lighting Control Module
F29DA
X1 8
F84UA
X5 25
820 BN/YE
U1D
-U1D
820 BN/YE
J112
820 BN/YE
820 BN/YE
X4 45
B+
Trailering Systems Schematics
820 BN/YE
X50A Engine Wiring Harness Junction Block
KR41 High Mount Stop Lamp Relay
F51UA 10A
X4 48
X1 - 41 (Not Used)
14
F83UA 10A
X3 27
50Y
840 RD/BU
X100 24
840 RD/BU
X382 1
840 RD/BU
1430 WH/VT
1
1053 BU/BK
2
2250 BK
G104
E6 High Mount Stop Lamp
3
550 BK
G301A(KI6/KI7)
G301B(-KI6/KI7)
J420
7762 GY/BU
1
E33R Cargo Lamp - Right
2
750 BK
7762 GY/BU
1
E33L Cargo Lamp - Left
2
750 BK
G401A

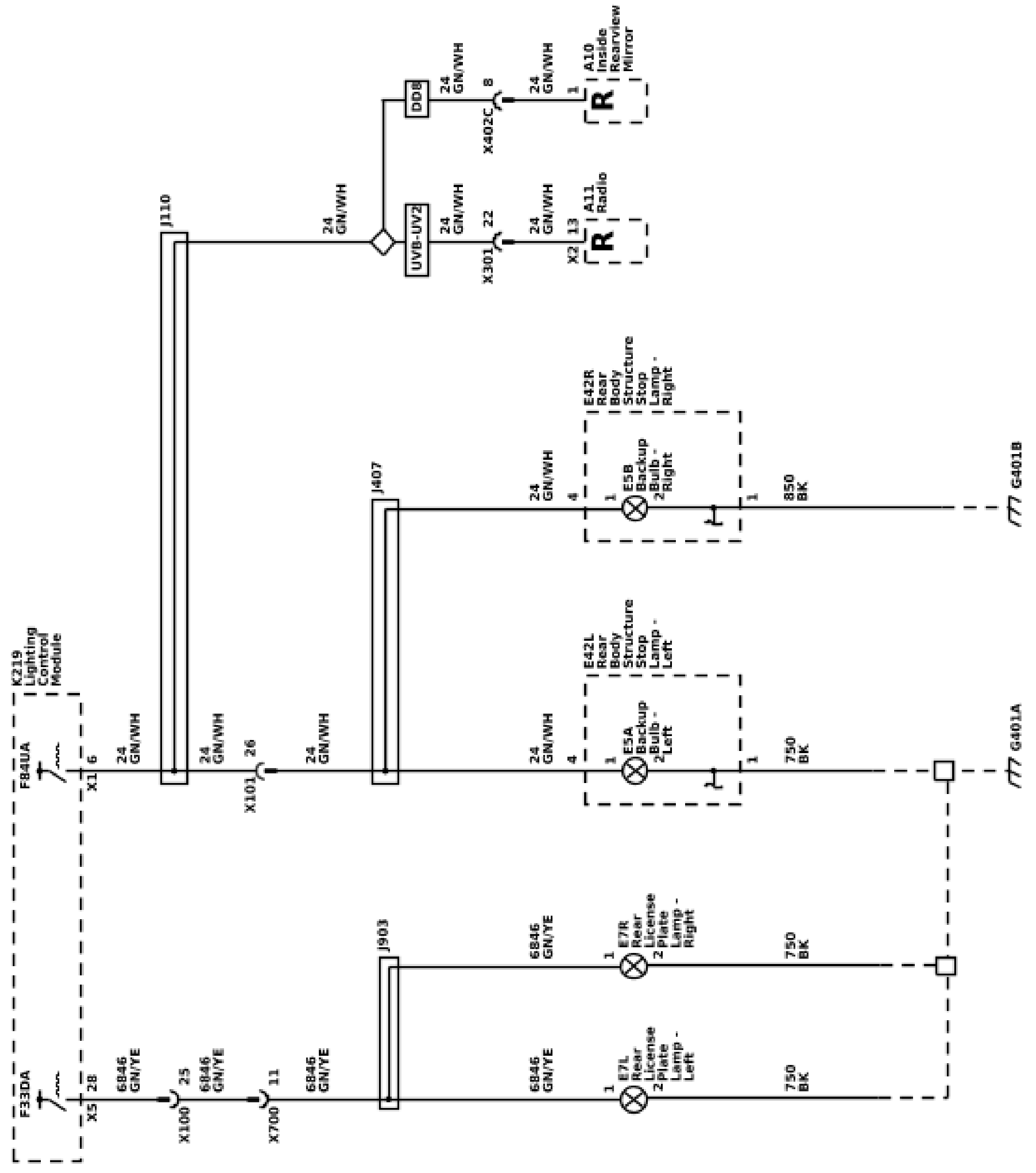
Exterior Lights Schematics (Identification Lights)


B+
X50A
Engine
Wiring
Harness
Junction
Block
KR53
Parking
Lamp
Relay
F52UA
15A
F60UA
15A
F28UA
20A
X4 35
X3 14
X4 37
X1-39
(Not Used)
X4-236
(Not Used)
X1-24
(Not Used)
X4-28
(Not Used)
X1-32
(Not Used)
7055
WH/BN
2250
BK
4246
BN/GN
J107
X2 19
F2DA
F4DA
K219
Lighting
Control
Module
4246
BN/GN
4246
BN/GN
4246
BN/GN
X250R 32
X100 26
4246
BN/GN
J406
4246
BN/GN
4246
BN/GN
4246
BN/GN
X808 2
X708 2
4246
BN/GN
4246
BN/GN
2
E2LFW
Front Side
Marker
1 Lamp -
Left Wheel
Opening
Molding
2
E2RFW
Front Side
Marker
1 Lamp -
Right
Wheel
Opening
Molding
2
E2RRW
Rear Side
Marker
1 Lamp -
Right
Wheel
Opening
Molding
2
E2LRW
Rear Side
Marker
1 Lamp -
Left Wheel
Opening
Molding
3750
BK
2050
BK
850
BK
850
BK
G104
G176
G102E
G401B
G401A

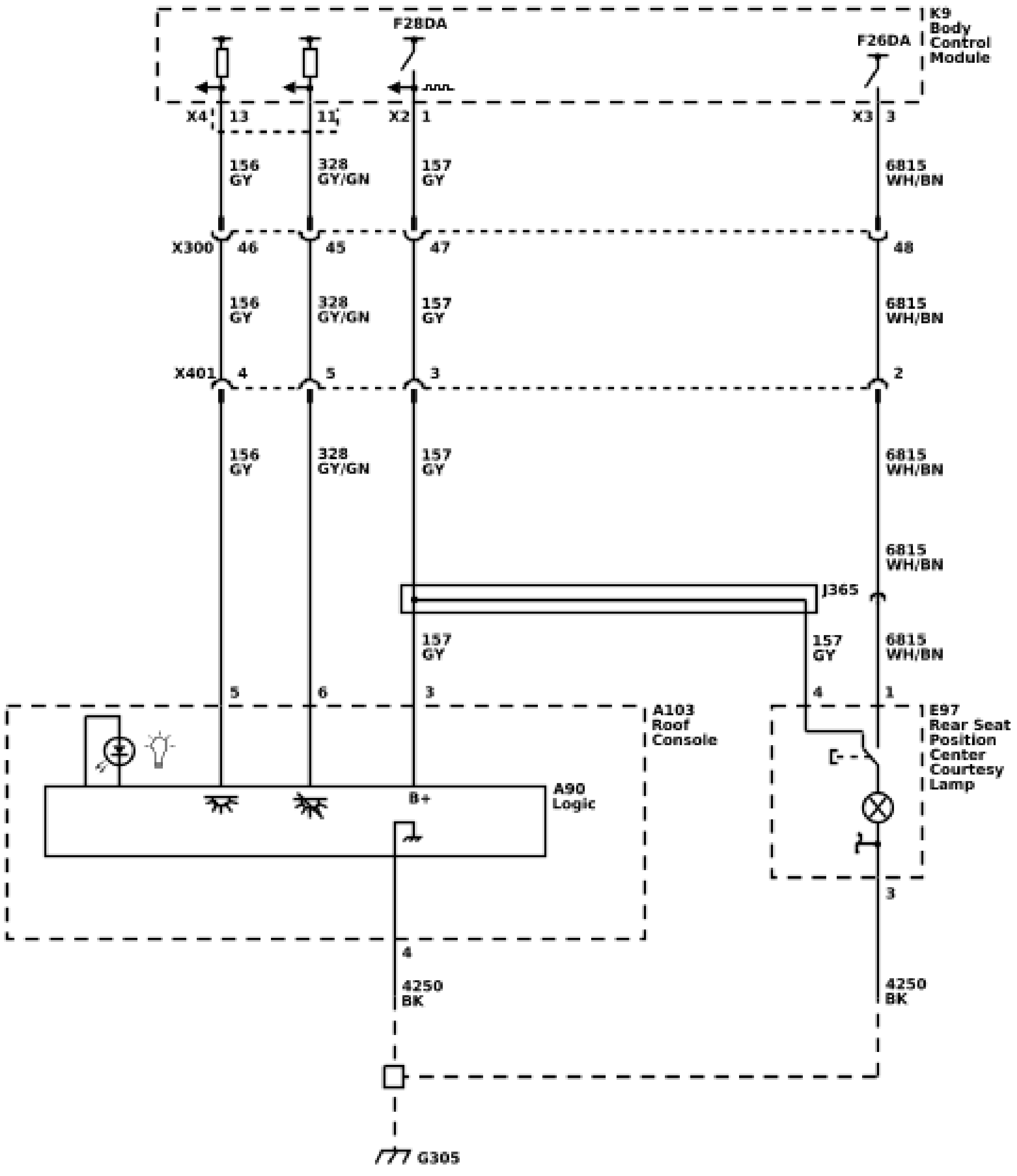
6853022

Exterior Lights Schematics (Backup and License Lamps)

6853023

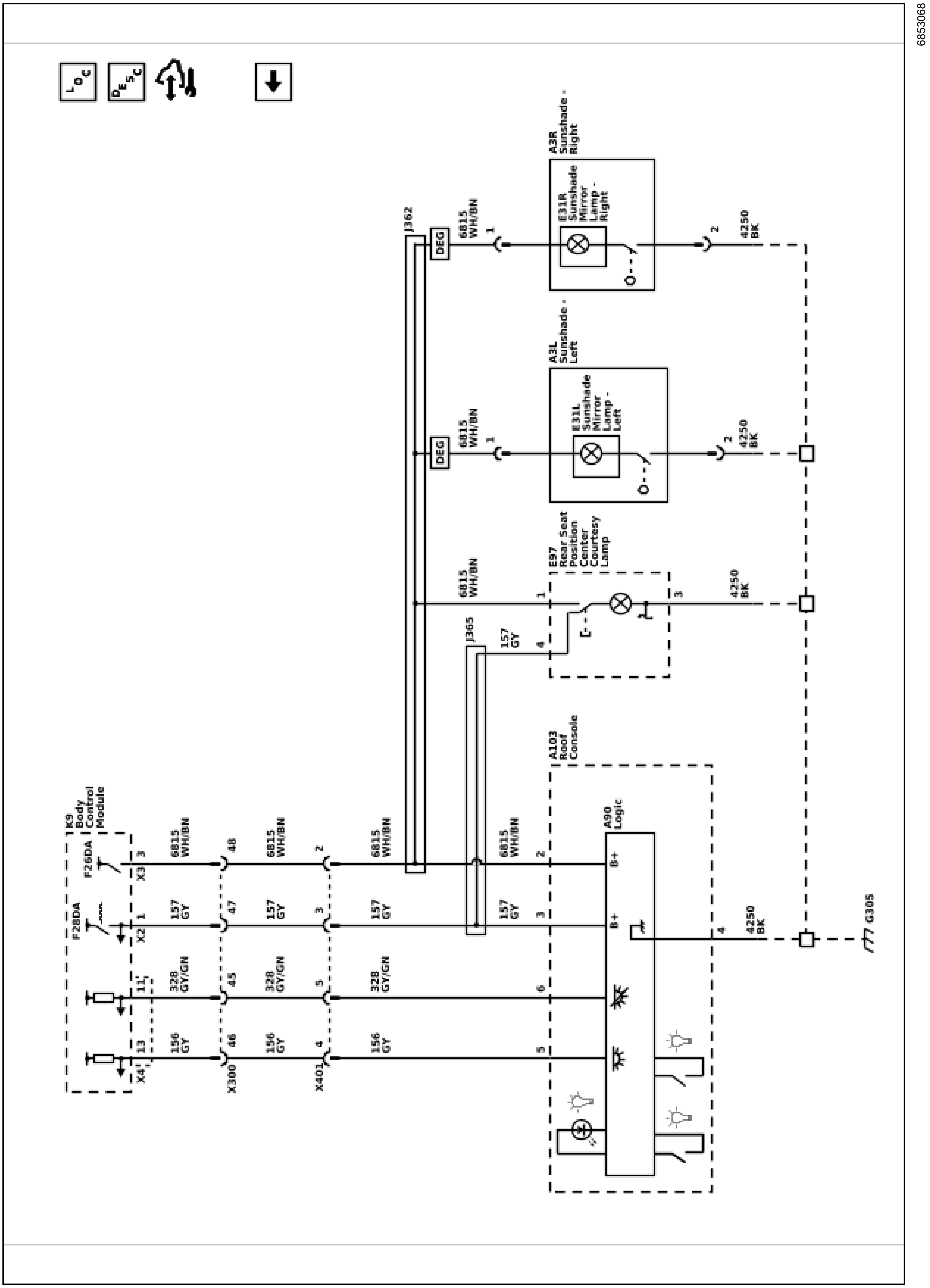

K219 Lighting Control Module
F84UA
X1 6
F33DA
X5 28
24 GN/WH
J110
26
X101
J407
4
1
E5A Backup Bulb - Left
2
E42L Rear Body Structure Stop Lamp - Left
750 BK
G401A
E5B Backup Bulb - Right
E42R Rear Body Structure Stop Lamp - Right
850 BK
G401B
UVB-UV2
22
X301
X2 13
A11 Radio
DDB
8
X402C
A10 Inside Rearview Mirror
6846 GN/YE
25
X100
11
X700
J903
E7L Rear License Plate Lamp - Left
E7R Rear License Plate Lamp - Right

Interior Lights Schematics (Dome Lamps (C91))

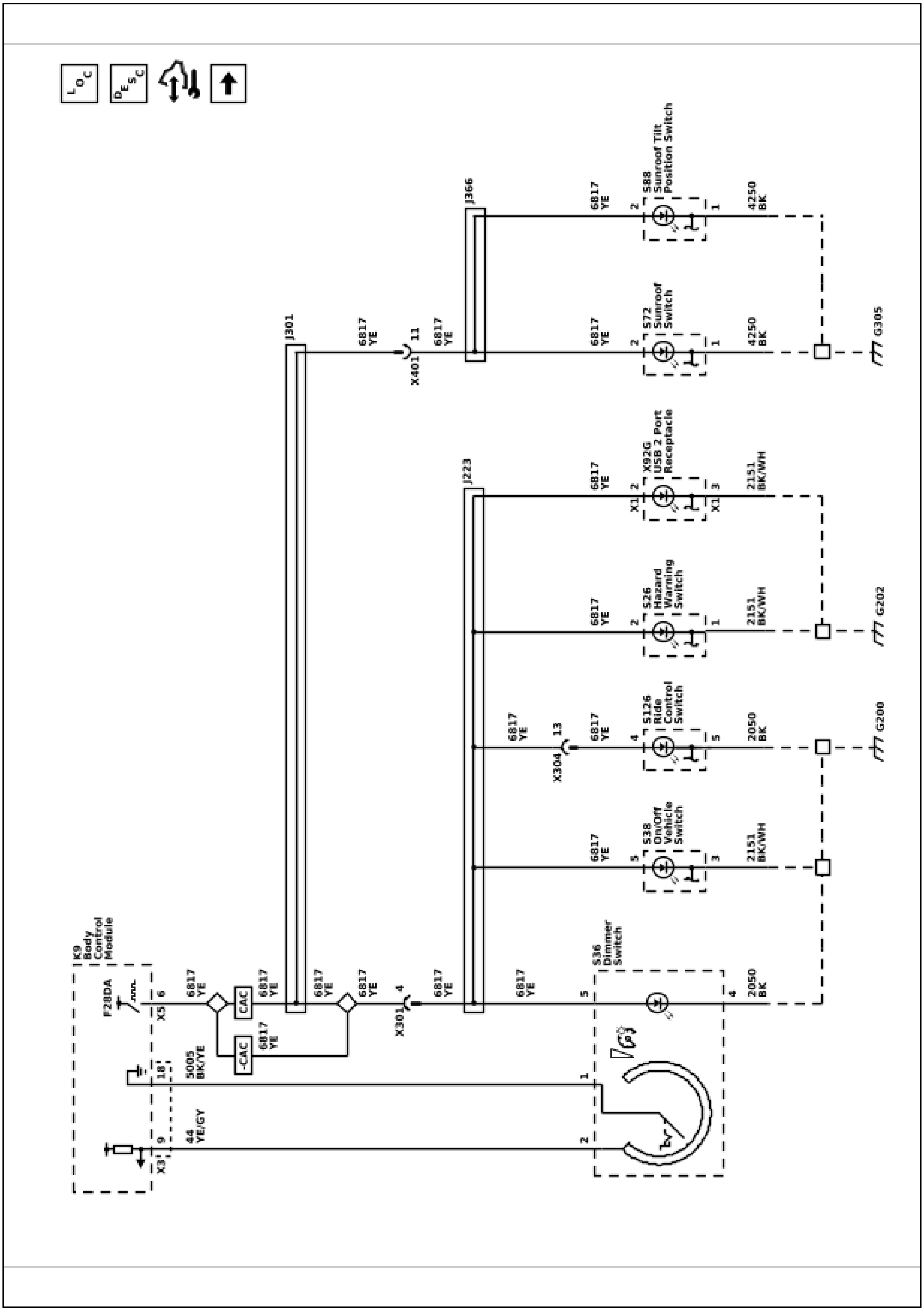

K9
Body
Control
Module
F28DA
F26DA
X4 13
11
X2 1
X3 3
156
GY
328
GY/GN
157
GY
6815
WH/BN
X300 46
45
47
48
X401 4
5
3
2
J365
5
6
3
4
1
A103
Roof
Console
A90
Logic
B+
E97
Rear Seat
Position
Center
Courtesy
Lamp
4250
BK
G305

6853067

Interior Lights Schematics (Dome/Reading, and Sunshades (C75 / DEG))

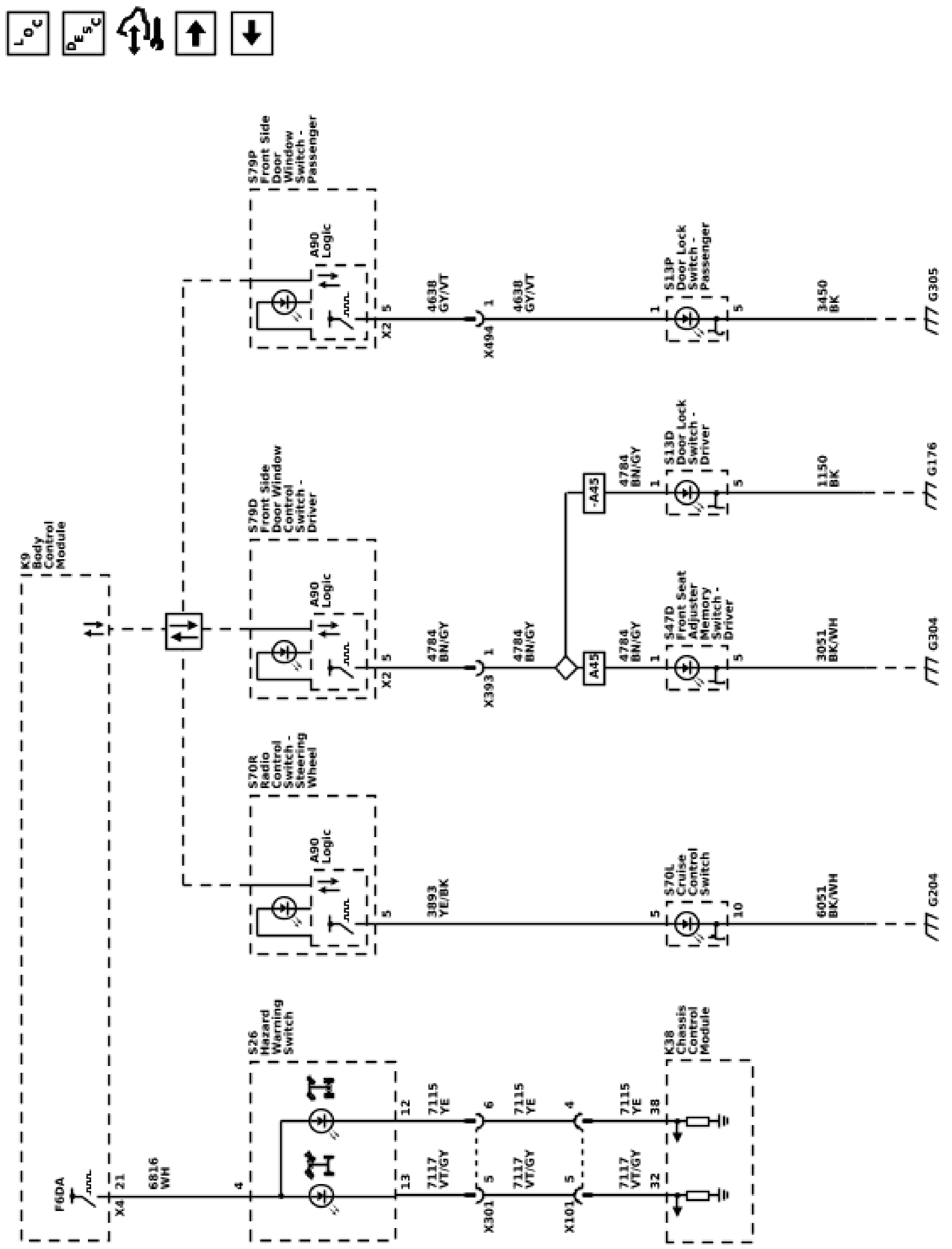

6853068
K9 Body Control Module
F28DA
F26DA
X3 3
X2 1
11
X4 13
6815 WH/BN
157 GY
328 GY/GN
156 GY
X300
48
47
45
46
X401
2
3
5
4
J362
J365
DEG
1
2
A3R Sunshade - Right
E31R Sunshade Mirror Lamp - Right
A3L Sunshade - Left
E31L Sunshade Mirror Lamp - Left
E97 Rear Seat Position Center Courtesy Lamp
4250 BK
A103 Roof Console
A90 Logic
B+
6
G305

Interior Lights Dimming Schematics (Dimming Control, Instrument Panel, and Sunroof Lights)

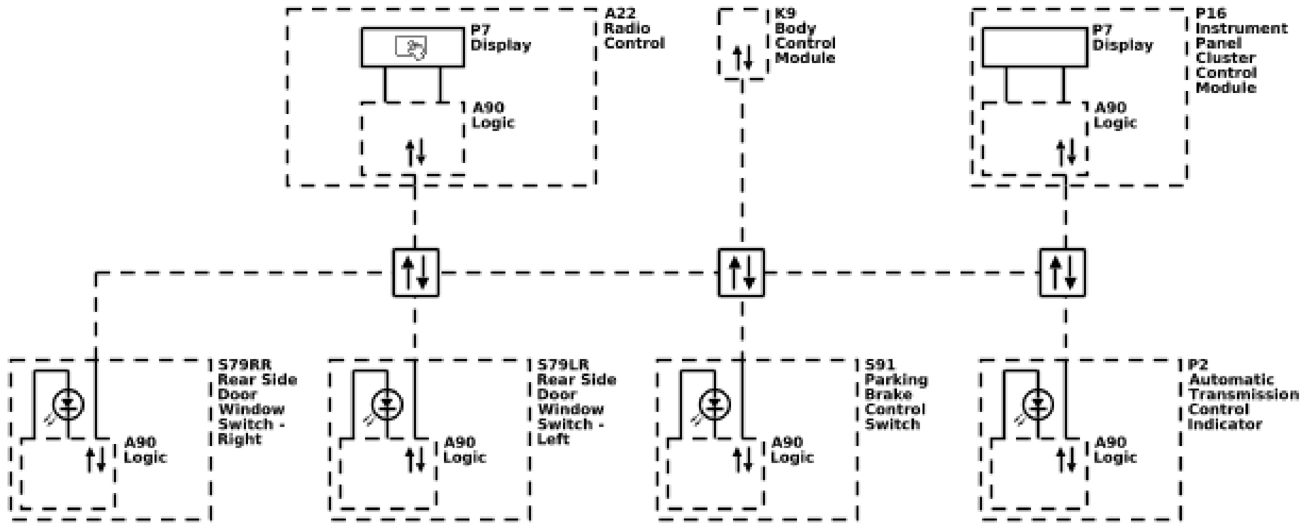

6853064
K9 Body Control Module
F28DA
X5 6
X3 18
X3 9
6817 YE
5005 BK/YE
44 YE/GY
CAC
-CAC
J301
J223
J366
X301 4
X401 11
X304 13
S36 Dimmer Switch
S38 On/Off Vehicle Switch
S126 Ride Control Switch
S26 Hazard Warning Switch
X92G USB 2 Port Receptacle
S72 Sunroof Switch
S88 Sunroof Tilt Position Switch
2050 BK
2151 BK/WH
4250 BK
G200
G202
G305

Interior Lights Dimming Schematics (Door Components and Steering Wheel Switch Lamps)

6853065


K9 Body Control Module
F6DA
X4 21
6816 WH
S26 Hazard Warning Switch
4
12
13
7115 YE
7117 VT/GY
X301
6
5
X101
4
5
38
32
K38 Chassis Control Module
S70R Radio Control Switch - Steering Wheel
A90 Logic
5
3893 YE/BK
S70L Cruise Control Switch
5
10
6051 BK/WH
G204
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X2 5
4784 BN/GY
X393 1
A45
-A45
S47D Front Seat Adjuster Memory Switch - Driver
1
5
3051 BK/WH
G304
S13D Door Lock Switch - Driver
1
5
1150 BK
G176
S79P Front Side Door Window Switch - Passenger
A90 Logic
X2 5
4638 GY/VT
X494 1
S13P Door Lock Switch - Passenger
1
5
3450 BK
G305

Interior Lights Dimming Schematics (Serial Data Dimming)


A22
Radio
Control
P7
Display
A90
Logic
K9
Body
Control
Module
P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
S79RR
Rear Side
Door
Window
Switch -
Right
A90
Logic
S79LR
Rear Side
Door
Window
Switch -
Left
A90
Logic
S91
Parking
Brake
Control
Switch
A90
Logic
P2
Automatic
Transmission
Control
Indicator
A90
Logic

6853066

Description and Operation

Exterior Lighting Systems Description and Operation

The exterior lighting system consist of the following lamps:

- Backup lamps
- Cargo lamps
- Daytime running lamps (DRL)
- Exterior courtesy lamps
- Hazard warning lamps
- Headlamps
- Park, tail, license, and marker lamps
- Front fog lamps (T3U)
- Stop lamps
- Task lamps
- Turn signal lamps
- Trailer lighting, refer to *Trailering Description and Operation 1-48* for more information.

Headlamp Controls

The Infotainment Display is used to determine headlamp mode between AUTO, ON, Park, and OFF. When the user selects the desired headlamp mode, the Radio sends out a serial data message to multiple modules containing headlamp mode status information. The modules that receive the serial data message respond accordingly. The headlamps may be turned ON in 3 different ways utilizing the Infotainment Display controls:

- When the headlamp mode is placed in the ON position, for normal operation
- When the headlamp mode is placed in the AUTO position, for automatic lamp control during low ambient light conditions
- When the headlamp mode is placed in the AUTO position, with the windshield wipers ON in daylight conditions, after a 6 second delay

Low Beam Headlamps

The K219 Lighting Control Module responds to low beam requests by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps. When the Lighting Control Module commands the low beam headlamps ON, the operator will notice the interior backlighting for the instrument cluster and the various other switches dim to the level of brightness selected by the instrument panel dimmer switch.

High Beam Headlamps

The high beam and flash to pass (FTP) functions are contained within the S78 Turn Signal Switch. The K9 Body Control Module (BCM) provides the turn signal/ multifunction switch with two signal circuits, the high beam signal circuit and the FTP signal circuit. When the low beam headlamps are ON, and the turn signal/ multifunction switch is placed in either the high beam position or FTP position, ground is applied to the BCM through the high beam/FTP signal circuit. The BCM responds to the high beam request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. The status of the high beam lamps is shown by a blue indicator located on the instrument cluster. When high beams are commanded on, the indicator will be illuminated continuously. If the driver turns the high beams off, the indicator will also turn off.

Flash to Pass

When the S78 Turn Signal Switch is momentarily placed in the flash to pass position, ground is applied to the turn signal/multifunction switch. The turn signal/ multifunction switch applies ground to the K9 Body Control Module (BCM) through the flash to pass switch signal circuit. The BCM responds to the flash to pass request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. This causes the high beam headlamps to illuminate at full brightness until the turn signal/multifunction switch is returned to the at rest position.

Automatic Headlamp Control

When the headlamp mode is in the AUTO position, the BCM relies on the B10D Sun Load and Ambient Light and Security Indicator Sensor input to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. During automatic lamp control, the headlamps will be off during daylight conditions but will turn on when the ambient light sensor detects low ambient light conditions. The ambient light sensor is a light sensitive transistor that varies the voltage signal to the BCM. The BCM provides a 5 volt reference signal and a low reference ground to the ambient light sensor. During low light conditions the BCM will request the low beam headlamps ON by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps.

Automatic High Beam Assist – IntelliBeam (TQ5)

The IntelliBeam system is activated by selecting the automatic high beam assist with the Infotainment Display while the exterior lamp control is in AUTO mode and the engine running. The IntelliBeam system consists of a front camera module that detects light, and is able to identify approaching vehicles on an even, straight road at a distance of greater than 0.4 km (0.25 mi). The front camera module analyzes light color, intensity, and movement. The IntelliBeam system will turn OFF the high beam headlamps when approaching vehicle headlamps or preceding vehicle taillights are detected by the front camera module. On vehicles equipped with Side Blind Zone Alert, IntelliBeam will proactively turn OFF the high beam headlamps when a vehicle is passing on the left or right side. The IntelliBeam system is turned off anytime the headlamp mode is out of the AUTO position.

IntelliBeam System Activation

- Vehicle ON
- Headlamp mode placed in the AUTO or ON position
- Outside lighting conditions must be dark
- Vehicle speed greater than 25 mph (40 km/h)

IntelliBeam System Operation

The following are conditions that the IntelliBeam system will turn the high beam headlamps off during operation:

- The system detects approaching traffic headlamps
- The system detects preceding traffic tail lamps
- The system detects a vehicle passing to the right or left (SBZA equipped only)
- Ambient light level too high due to towns or twilight situations
- The vehicle’s speed drops below 13 mph (22 km/h)
- Delay

Note: IntelliBeam may not operate properly if any of the following conditions exist:

- Approaching and preceding vehicles lamps are undetectable due to dirt, snow, road spray, smoke, fog, or any other airborne conditions.
- The front camera and/or side object sensor module(s) is covered with ice, dirt, snow, haze, or is obstructed.
- The vehicle is being driven on winding or hilly road conditions which would make any on coming vehicle headlamps undetectable by the IntelliBeam.

IntelliBeam System Deactivation

- Manually operating the high beam headlamp mode from neutral to high beam position
- IntelliBeam is deactivated automatically when the front or rear fog lamps are turned ON

IntelliBeam System Indicator

The status of the IntelliBeam system is shown by a green indicator located on the instrument panel cluster. When IntelliBeam is active, the indicator will be illuminated continuously. If the operator deactivates the IntelliBeam system, the indicator will turn off.

Daytime Running Lamps

The daytime running lamps (DRL) will illuminate continuously when the following conditions are met:

- Engine running
- The headlamp mode is in the AUTO position
- Ambient light conditions are daytime conditions

The B10D Sun Load and Ambient Light and Security Indicator Sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2 and 4.9 volts depending on outside lighting conditions. The K9 Body Control Module (BCM) provides a 5 volt reference signal and a low reference ground to the ambient light sensor. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lamps (DRL) or automatic lamp control when the headlamp mode is in the AUTO position. In daylight conditions the BCM will send a serial data message to the K219 Lighting Control Module to command the DRLs ON, the Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both DRL control circuits, illuminating the DRLs. During low light conditions the Lighting Control Module will command the low beam headlamps ON.

Hazard Lamps

The hazard flashers may be activated in any power mode. The Hazard Warning Switch signal circuit is momentarily grounded when the hazard switch is pressed. The K9 Body Control Module (BCM) responds to the hazard switch signal input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by supplying battery voltage to all turn signal lamps in an ON and OFF duty cycle. When the hazard switch is activated, the BCM also sends a serial data message to the instrument cluster requesting both turn signal indicators to be cycled ON and OFF.

Park, Tail, and License Lamps

When the headlamp mode is placed in the HEAD or PARK position, the K219 Lighting Control Module responds by applying battery voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

Stop Lamps

The B22 Brake Pedal Position Sensor is used to sense the action of the driver application of the brake pedal. The K9 Body Control Module (BCM) provides the brake pedal position sensor with low reference, signal, and 5 volt reference circuits. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will respond by sending a serial data message to the K219 Lighting Control Module requesting the stop lamps to be turned ON. The Lighting Control Module responds by applying battery voltage to the left and right stop lamp control circuits as well as the center high mounted stop lamp control circuit illuminating the left and right stop lamps and the center high mounted stop lamp. If serial data communication is lost between the BCM and the Lighting Control Module, the Lighting Control Module will receive a serial data message from the Electronic Brake Control Module indicating that the brakes have been applied. If serial data communication is lost between all three modules, the Lighting Control Module also receives a hard wired voltage signal from the BCM to signal the brake lamps ON.

Turn Signal Lamps

Turn Signals

The K9 Body Control Module (BCM) provides the S78 Turn Signal Switch with left and right turn signal switch signal circuits. Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the BCM through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying a pulsating voltage to the turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is also sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

Turn Signal Outage Detection

Vehicles with LED turn signals require additional turn signal outage detection circuits that provide turn signal feedback to the K219 Lighting Control Module. The Lighting Control Module uses the feedback information to send a serial data message to the instrument cluster to alert the driver anytime a turn signal fault is detected. If a fault is detected on a turn signal circuit or a turn signal feedback circuit, the turn signals will flash in a rapid manner to alert the driver of the fault.

Backup Lamps

With the engine running and the transmission in the reverse position, the transmission control module (TCM) sends a serial data message to the multiple control modules. The message indicates that the gear selector is in the reverse position. The K9 Body Control Module (BCM) responds to the reverse position message by sending a serial data message to the K219 Lighting Control Module to request the backup lamps on. The Lighting Control Module responds by applying battery voltage to the backup lamps control circuit(s) illuminating the backup lamps. The applied voltage is also sent to the A11 Radio and A10 Inside Rearview Mirror for rearview camera purposes. Once the driver moves the gear selector out of the reverse position, a serial data message is sent by the TCM that the transmission is no longer in the reverse position. The BCM responds to the reverse position message by sending a serial data message to the Lighting Control Module to request the backup lamps off. The Lighting Control Module responds by removing battery voltage from the backup lamp circuits. The engine must be running for the backup lamps to operate.

Cargo Lamps

When the K219 Lighting Control Module receives a cargo lamp request from the Infotainment Display, the lighting control module responds by applying pulse width modulated (PWM) voltage to the cargo lamp control circuits illuminating the cargo lamps. In the event that the cargo lamps were to remain illuminated for more than 20 minutes with the ignition switch in the OFF position, the lighting control module will deactivate the cargo lamp control circuits to prevent total battery discharge.

Approach Lighting

Approach lighting is commanded ON when the unlock button is pressed on the keyless entry transmitter during dark ambient light conditions. When the keyless entry transmitter unlock button is pressed, a serial data message is sent by the K9 Body Control Module (BCM) that the vehicle is being unlocked. The K219 Lighting Control Module responds to the serial data message by applying voltage to the approach lamp control circuit illuminating the LED lighting located under each outside rearview mirror as part of approach lighting.

Battery Run Down Protection/Inadvertent Power

To provide battery run down protection, the exterior lamps will be deactivated automatically under certain conditions. The K9 Body Control Module (BCM) monitors the state of the S30 Headlamp Switch. If the headlamp switch is in the park or headlamp position when the ignition switch is ON and then the ignition switch is placed in the OFF position, the BCM initiates a 10 minutes timer. At the end of the 10 minutes, the BCM will send a serial data message to the K219 Lighting Control Module to deactivate the exterior lamps to prevent total battery discharge. This feature will be cancelled if any power mode other than OFF becomes active.

The BCM will disable battery run down protection if any of the following conditions exist:

- The park or headlamp switch is changed from the ON to OFF position, and back to the ON position during battery run down protection.
- The BCM determined that the park or headlamp switch was not active when the ignition was turned OFF.

Interior Lighting Systems Description and Operation

Interior Lamps

Dome Lamps Control
The K9 Body Control Module (BCM) sends the A103 Roof Console a dome lamp ON signal circuit and a dome lamp OFF signal circuit. The ON/OFF signal circuit becomes grounded with the switch in the appropriate position. The BCM responds to the dome lamp ON request by applying PWM voltage to all dome lamp control circuits when the switch is in the ON position and removes voltage when the switch is in the OFF position. When the switch is in the DOOR position, both signal circuits remain open and the BCM relies on door ajar inputs to control the dome lamps ON as part of DOOR mode. When any door is opened, the door ajar switch contacts close and the BCM receives a door-open input and responds by applying voltage to the dome lamp control circuits. In the event that a dome/reading lamp were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the dome/reading lamp control circuit to prevent total battery discharge.

Keyless Entry Interior Illumination
When the operator uses the keyless entry transmitter in order to unlock the doors, the K9 Body Control Module (BCM) receives a door-unlock signal. The BCM must receive inputs from various systems that indicate that the ignition switch is OFF, the courtesy lamp switch is OFF, and all doors are closed before the BCM will activate the interior lamps. After all doors have been closed, the courtesy lamps will turn OFF immediately if the ignition switch is turned to the ON position, the door locks are LOCKED, or approximately 20 seconds after the last door closes. The BCM will turn off the courtesy lamps through the theater dimming feature. The BCM keeps the courtesy lamps on for 40 seconds after an alarm event is completed.

Reading Lamps
When a reading lamp button is pressed, the switch contacts close providing a path to ground for the signal circuit from the A103 Roof Console. The roof console responds by applying battery voltage to the appropriate reading lamp control circuit illuminating the reading lamp. If the operator inadvertently leaves a reading lamp ON, the BCM will send a serial data message to turn all interior lighting off after 10 minutes has passed to prevent total battery discharge.

Sunshade Mirror Lamp
The inadvertent power supply voltage circuit from the K9 Body Control Module (BCM) provides battery voltage to the passenger side sunshade mirror lamp. When the sunshade mirror cover is opened, a switch closes providing ground and the sunshade lamp illuminates. If the operator inadvertently leaves the sunshade mirror cover open with the lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

Interior Lamps Dimming

With the headlamp mode in the PARK or HEAD position, the K9 Body Control Module (BCM) responds by applying voltage to the backlight dimming control circuits illuminating all components with interior backlighting. All interior backlighting turns on at the dimming level set by the dimmer switch. The dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The BCM provides a signal circuit and a low reference circuit to the dimmer switch for backlight dimming. When a dimming setting is selected, the signal circuit becomes grounded through the variable resistor internal to the dimmer switch and voltage from the BCM will decrease accordingly. The BCM interprets the signal and responds in two ways. The BCM applies a pulse width modulated (PWM) voltage through the LED dimming control circuits illuminating the interior backlighting to the requested level of brightness. The BCM also sends a serial data message to the appropriate control modules requesting all dimming components to be illuminated to the same level of brightness.

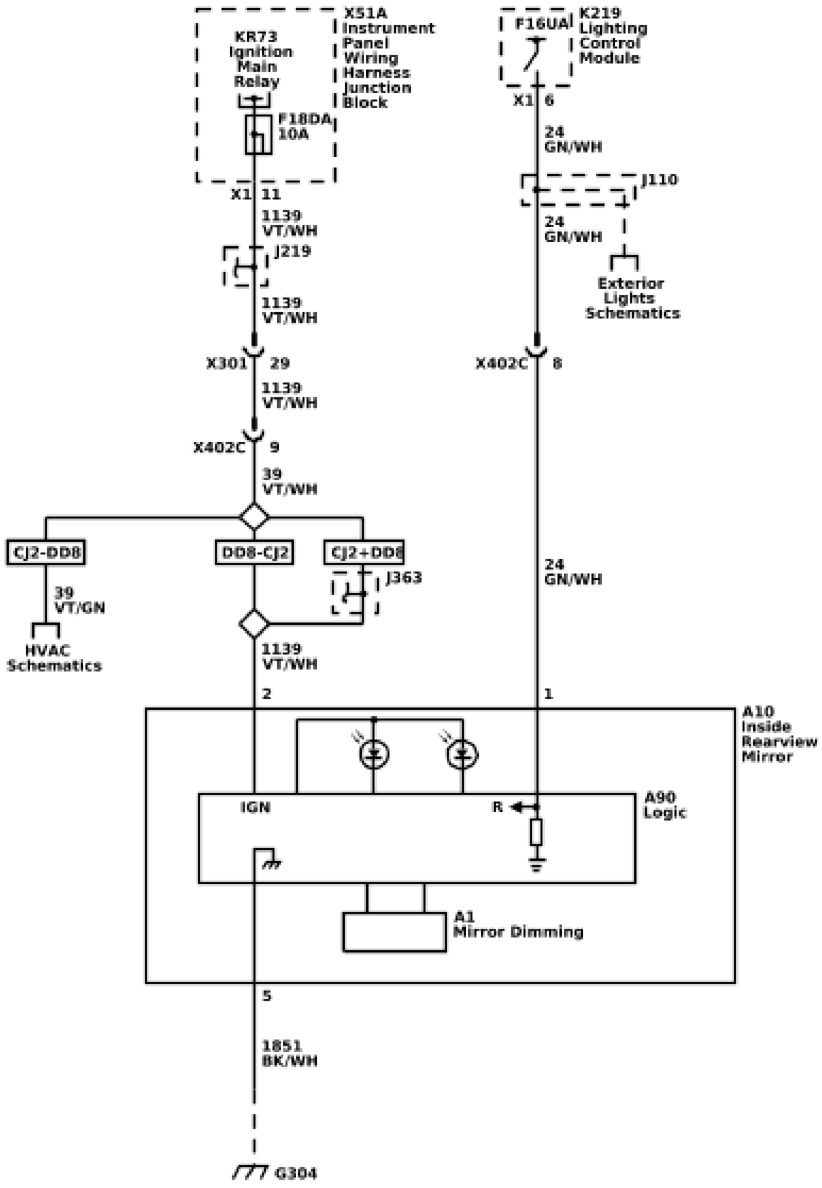
Battery Rundown Protection/Inadvertent Power

The K9 Body Control Module (BCM) inadvertent power supply voltage circuit provides battery voltage to all of the interior courtesy lamps. In the event that any of these lamps were to remain illuminated for a period of more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power supply voltage circuit to prevent total battery discharge. If the ignition switch is turned to any position other than OFF, or if a lamp switch is activated during this 10 minute period, the timer resets for another 10 minutes.

Mirrors

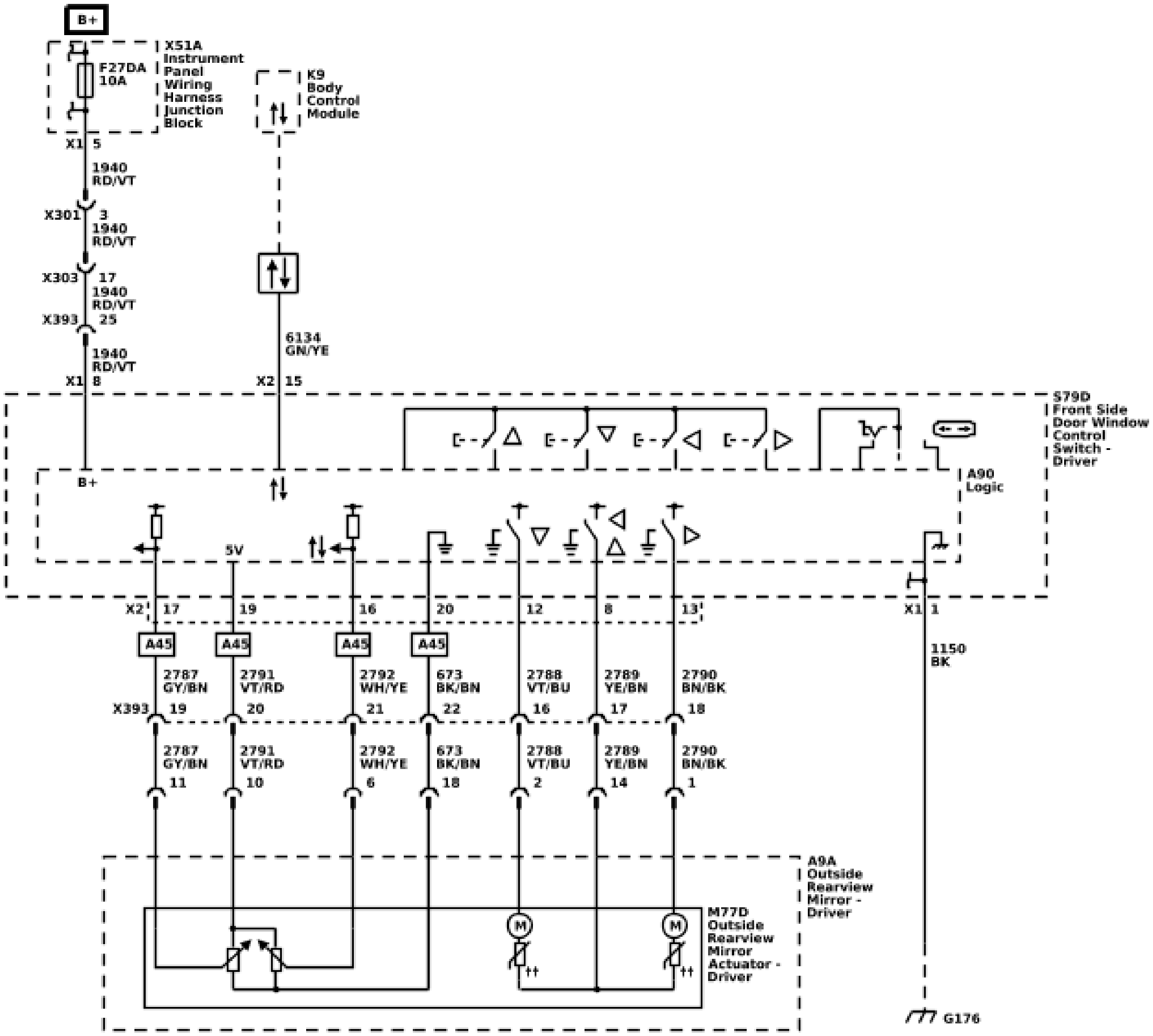
Schematic and Routing Diagrams

Inside Rearview Mirror Schematics (Auto-Dimming Mirror (DD8))


X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F18DA 10A
X1 11
1139 VT/WH
J219
1139 VT/WH
X301 29
1139 VT/WH
X402C 9
39 VT/WH
CJ2-DD8
DD8-CJ2
CJ2+DD8
J363
39 VT/GN
HVAC Schematics
1139 VT/WH
2
F16UA
K219 Lighting Control Module
X1 6
24 GN/WH
J110
24 GN/WH
Exterior Lights Schematics
X402C 8
24 GN/WH
1
A10 Inside Rearview Mirror
IGN
R
A90 Logic
A1 Mirror Dimming
5
1851 BK/WH
G304

6853061

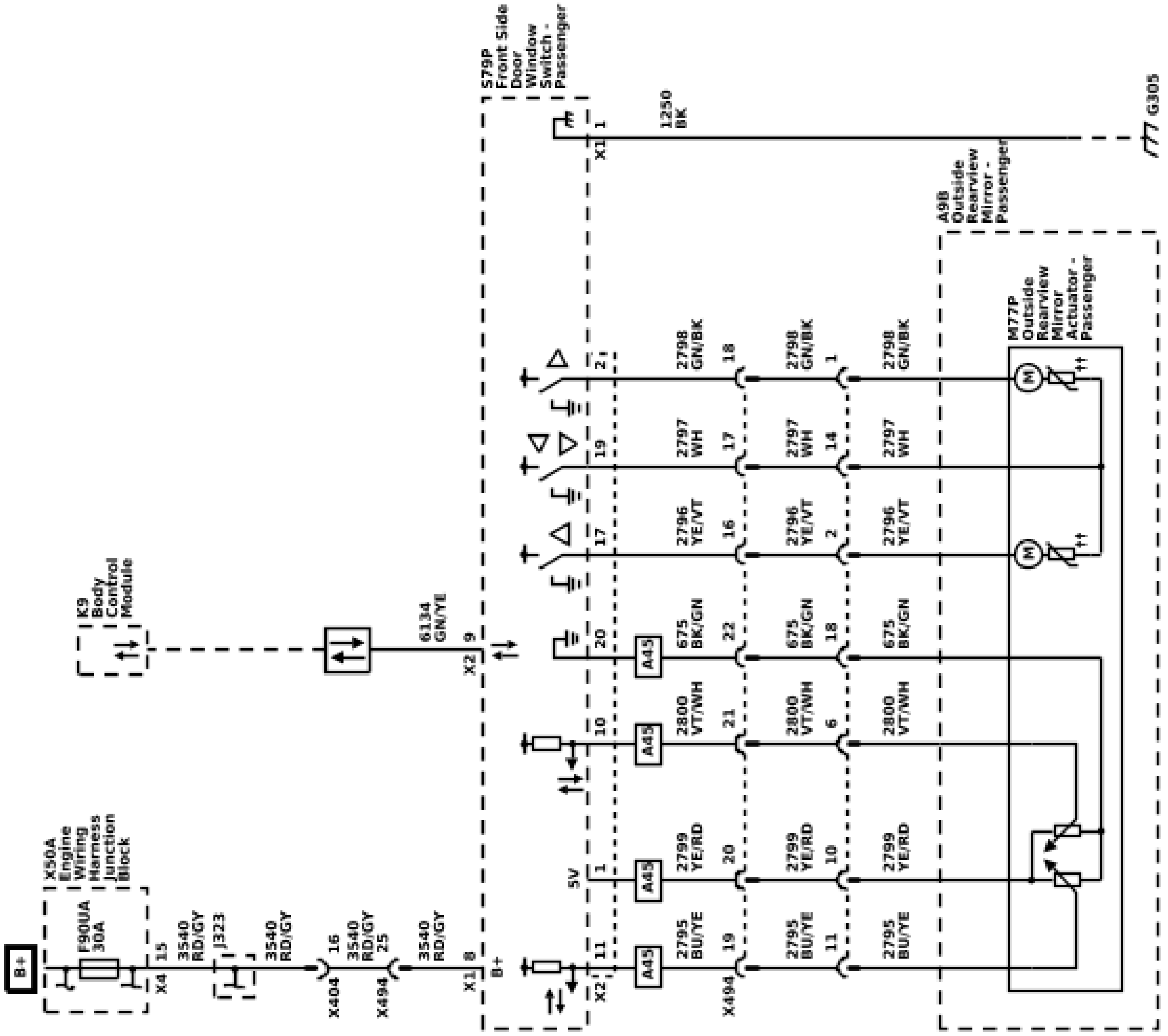
Outside Rearview Mirror Schematics (Driver Controls and Position)


B+
X51A Instrument Panel Wiring Harness Junction Block
F27DA 10A
X1 5
1940 RD/VT
X301 3
1940 RD/VT
X303 17
1940 RD/VT
X393 25
1940 RD/VT
X1 8
K9 Body Control Module
6134 GN/YE
X2 15
S79D Front Side Door Window Control Switch - Driver
A90 Logic
B+
5V
X2 17
19
16
20
12
8
13
X1 1
1150 BK
A45
A45
A45
A45
2787 GY/BN
2791 VT/RD
2792 WH/YE
673 BK/BN
2788 VT/BU
2789 YE/BN
2790 BN/BK
X393 19
20
21
22
16
17
18
2787 GY/BN
2791 VT/RD
2792 WH/YE
673 BK/BN
2788 VT/BU
2789 YE/BN
2790 BN/BK
11
10
6
18
2
14
1
A9A Outside Rearview Mirror - Driver
M77D Outside Rearview Mirror Actuator - Driver
M
M
G176

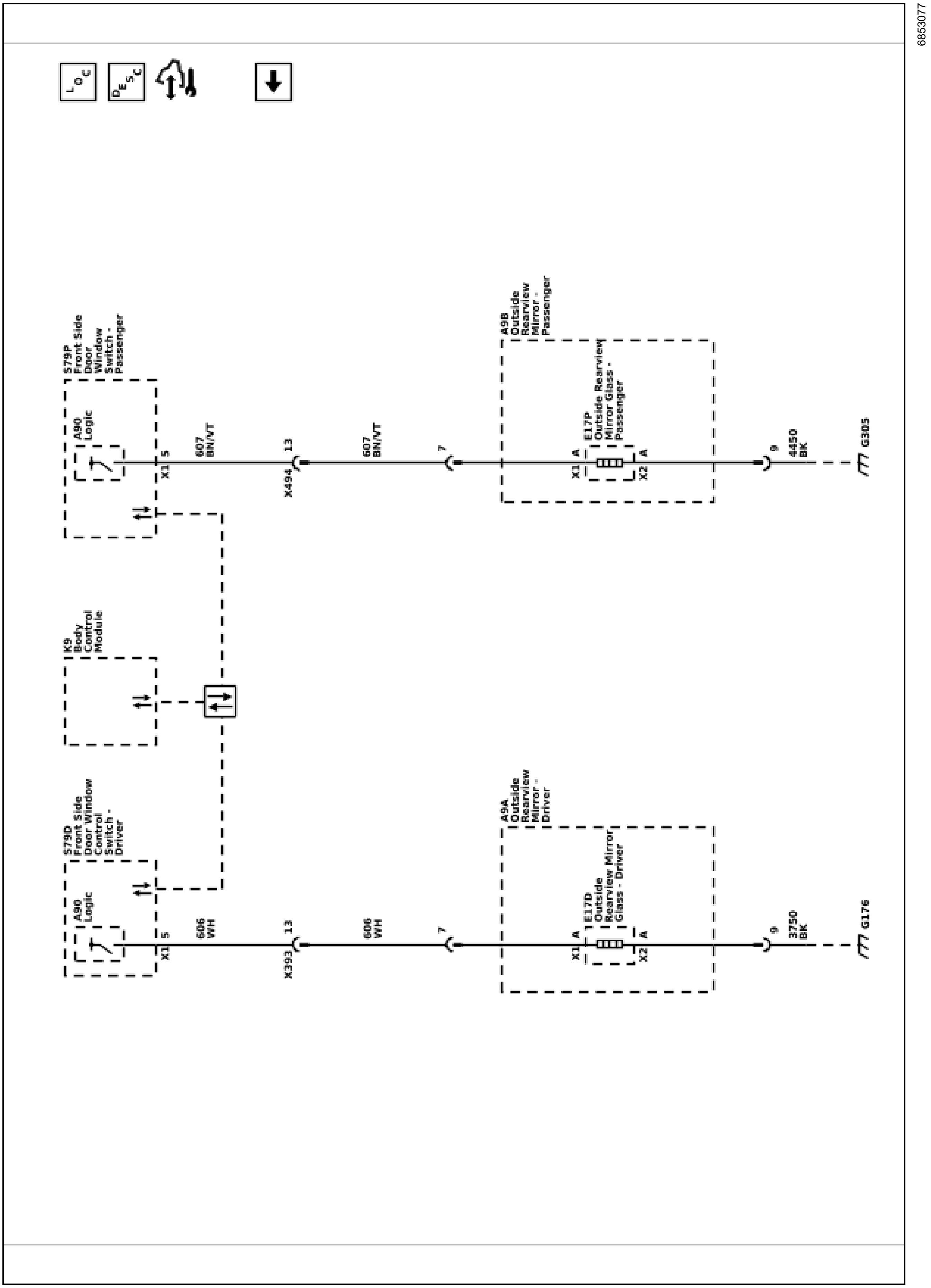
6853075

Outside Rearview Mirror Schematics (Passenger Controls and Position)

6853076


B+
X50A Engine Wiring Harness Junction Block
F90UA 30A
X4 15
3540 RD/GY
J323
3540 RD/GY
X404 16
3540 RD/GY
X494 25
3540 RD/GY
X1 8
B+
K9 Body Control Module
6134 GN/YE
X2 9
S79P Front Side Door Window Switch - Passenger
X1 1
1250 BK
G305
5V
X2 11
1
10
20
17
19
21
A45
A45
A45
A45
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
X494
19
20
21
22
16
17
18
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
11
10
6
18
2
14
1
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
A9B Outside Rearview Mirror - Passenger
M77P Outside Rearview Mirror Actuator - Passenger
M
M

Outside Rearview Mirror Schematics (Heating)


6853077
LOC
DESC
S79P Front Side Door Window Switch - Passenger
A90 Logic
X1 5
607 BN/VT
13
X494
607 BN/VT
7
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
X1 A
X2 A
9
4450 BK
G305
K9 Body Control Module
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 5
606 WH
13
X393
606 WH
7
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
X1 A
X2 A
9
3750 BK
G176

Description and Operation

Automatic Day-Night Mirror Description and Operation

Inside Rearview Mirror with the Automatic Day-Night Feature System Operation

The inside rearview mirror uses 2 photocell sensors. One sensor is the headlight sensor, located on the face side of the mirror. The headlight sensor is used to determine light conditions present at the mirror face. The other sensor is the ambient light sensor, located on the rear of the mirror or windshield side. The ambient light sensor is used to determine the exterior light conditions. With a low exterior light condition detected, and a high light condition from behind the car, at the headlight sensor, the inside rearview mirror will automatically darken the face of the mirror.

In the daytime, the mirror is in a normal state because of the high exterior light condition that is indicated by the ambient light sensor. With the gear selector lever in the REVERSE position and the Ignition ON/Vehicle in Service Mode, backup lamp supply voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirror clearly when backing up, even during the night.

Driver Outside Rearview Mirror with Automatic Day-Night System Operation (If Equipped)

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies control and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle.

Outside Mirror Description and Operation

Power Mirror System Components

The power mirror system consists of the following components:

- Body Control Module
- Driver Seat Adjuster Memory Module
- Outside Mirror Switch
- Passenger Window Switch
- Left Outside Rearview Mirror
- Right Outside Rearview Mirror

Power Mirror System Controls

The outside rearview mirror switch is part of the S79D Driver Front Side Door Window Control Switch and uses serial data to control the passenger mirror through the S79P Passenger Front Side Door Window Control Switch. Each S79 Side Door Window Control Switch has it own 12V, ground and data communications circuit along with mirror directional control and mirror fold circuits.

Driver Mirror Controls

The S79D Driver Front Side Door Window Control Switch has internal connections for the driver mirror. When the mirror position switch is active the driver mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Passenger Mirror Controls

The S79D Driver Front Side Door Window Control Switch uses serial data circuits to communicate the active states for the passenger mirror switch to the S79P Passenger Front Side Door Window Control Switch. The S79P Passenger Front Side Door Window Control Switch has internal connections for the passenger mirror. When the mirror position switch is active the passenger mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror Position

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. Each S79 Front Side Door Window Control Switch supplies a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the S79 Front Side Door Window Control Switch and the signal circuit voltage levels represent the mirror positions. The mirror positions are stored in each S79 Front Side Door Window Control Switch for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat control module will send the go to position to the S79 Front Side Door Window Control Switch. The S79 Front Side Door Window Control Switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Mirror Select

The S79D Driver Front Side Door Window Control Switch has internal connections for the mirror select switch. When the mirror select switch is active the S79 Front Side Door Window Control Switch will either control the driver mirror or send a serial data message to control the passenger mirror.

Folding Mirrors

The S79D Driver Front Side Door Window Control Switch sends the mirror fold/unfold inputs to the K9 Body Control Module (BCM) through serial data. When the BCM receives a fold/unfold signal it will send a fold/ unfold command to the S79 Driver Front Side Door Window Control Switch which will send a serial data message to the S79P Passenger Front Side Door Window Control Switch. The outside mirrors will fold or unfold depending on their current state. The BCM will also send a serial data message to unfold the mirrors when the vehicle reaches 20 km/h (12 mph). The S79 Front Side Door Window Control Switches control the fold/unfold motors through bi-directional control circuits

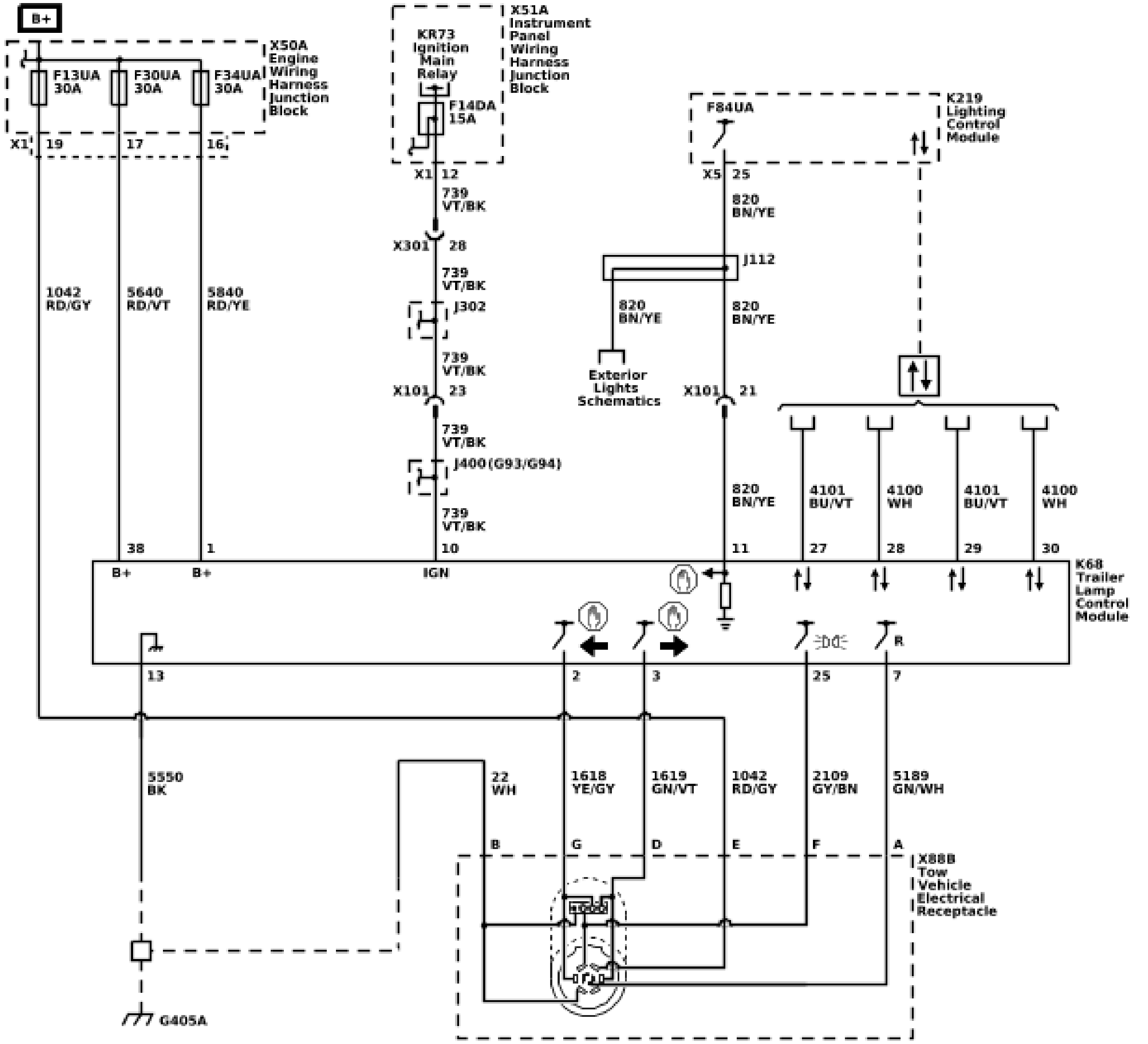
Heated Mirrors

The heated mirrors are controlled through each S79 Front Side Door Window Control Switch. When the vehicle is running and the HVAC control module receives a rear window defog request from the radio/ HVAC controls, the HVAC control module will send a serial data message to the S79D Driver Front Side Door Window Control Switch and S79P Passenger Front Side Door Window Control Switch. Each S79 Front Side Door Window Control Switch provide B+ voltage to the driver and passenger outside rearview mirror heating elements.

Trailering Systems

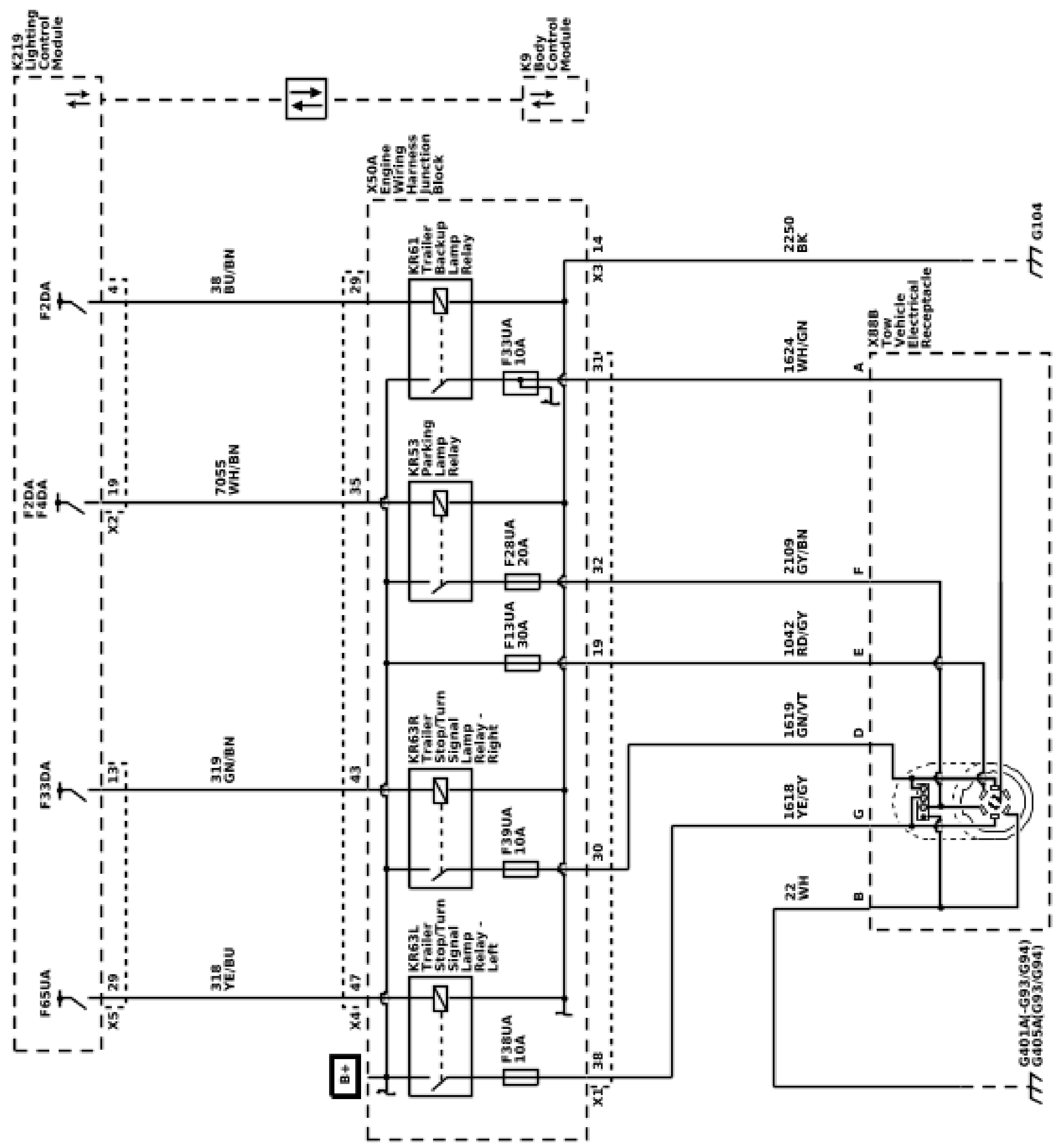
Schematic and Routing Diagrams

Trailering Systems Schematics (Trailer Lamp Control Module and Trailer Connector Pins: A, B, D, E, F, G)


B+
X50A Engine Wiring Harness Junction Block
F13UA 30A
F30UA 30A
F34UA 30A
X1 19
17
16
1042 RD/GY
5640 RD/VT
5840 RD/YE
38 B+
1 B+
KR73 Ignition Main Relay
F14DA 15A
X51A Instrument Panel Wiring Harness Junction Block
X1 12
739 VT/BK
X301 28
739 VT/BK
J302
739 VT/BK
X101 23
739 VT/BK
J400(G93/G94)
739 VT/BK
10 IGN
F84UA
K219 Lighting Control Module
X5 25
820 BN/YE
J112
820 BN/YE
820 BN/YE
Exterior Lights Schematics
X101 21
820 BN/YE
11
4101 BU/VT
4100 WH
4101 BU/VT
4100 WH
27
28
29
30
K68 Trailer Lamp Control Module
R
13
2
3
25
7
5550 BK
22 WH
1618 YE/GY
1619 GN/VT
1042 RD/GY
2109 GY/BN
5189 GN/WH
B
G
D
E
F
A
X88B Tow Vehicle Electrical Receptacle
G405A

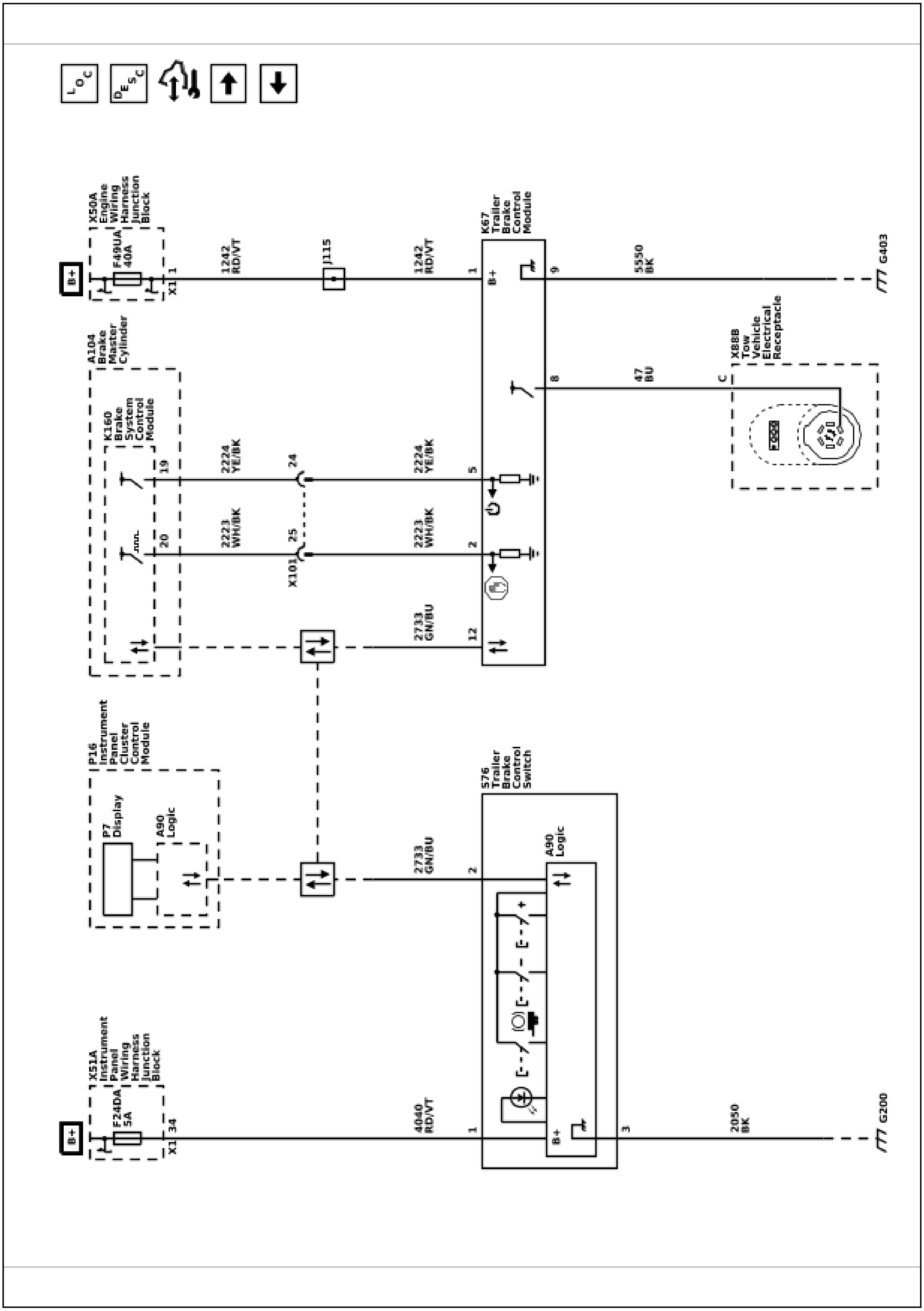
6853143

Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G)

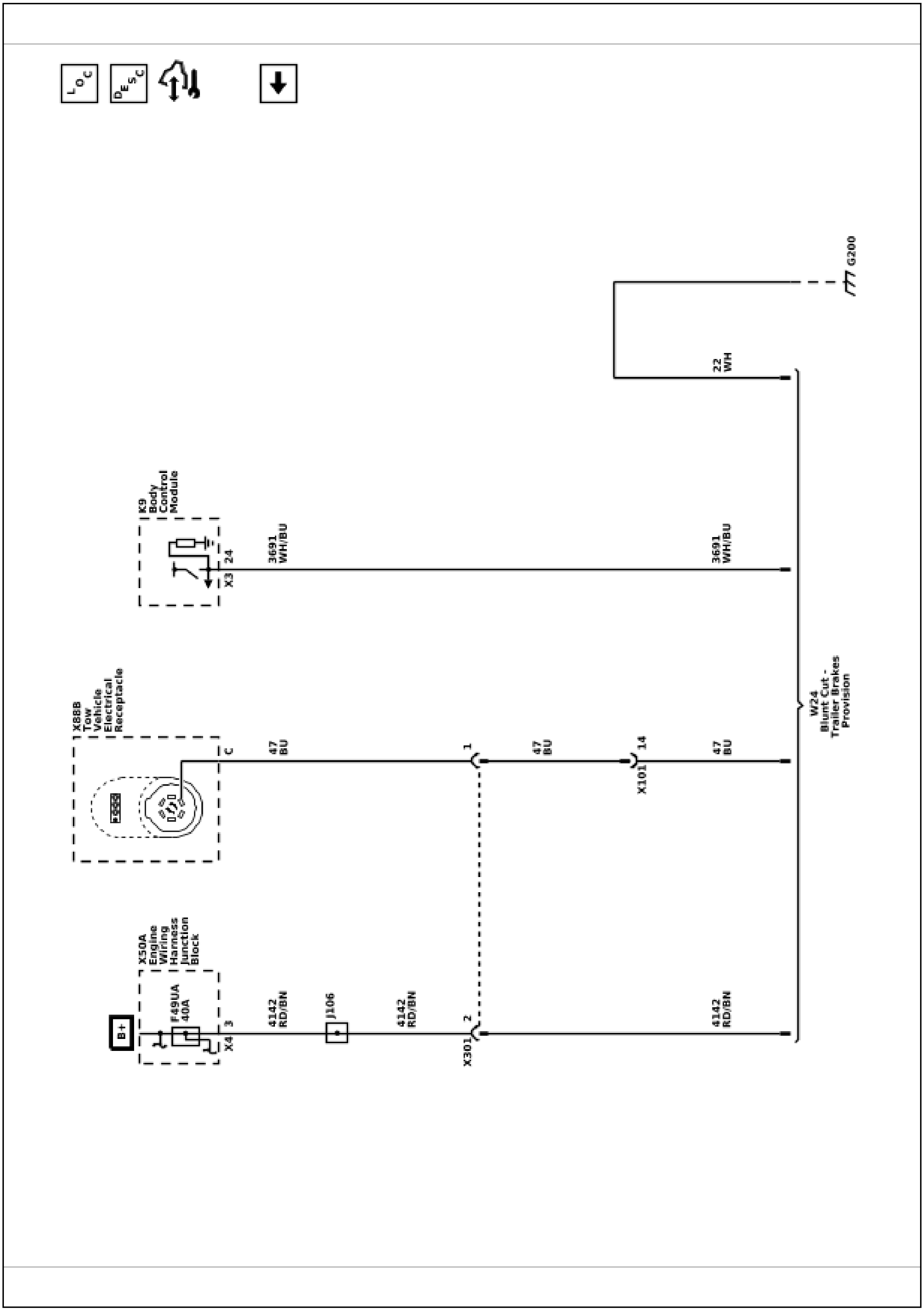

K219 Lighting Control Module
K9 Body Control Module
X50A Engine Wiring Harness Junction Block
F2DA
F2DA F4DA
F33DA
F65UA
X5 29
X2 19
13
4
38 BU/BN
7055 WH/BN
319 GN/BN
318 YE/BU
29
35
43
X4 47
B+
KR61 Trailer Backup Lamp Relay
KR53 Parking Lamp Relay
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
F33UA 10A
F28UA 20A
F13UA 30A
F39UA 10A
F38UA 10A
X3 14
31
32
19
30
X1 38
2250 BK
1624 WH/GN
2109 GY/BN
1042 RD/GY
1619 GN/VT
1618 YE/GY
22 WH
G104
X88B Tow Vehicle Electrical Receptacle
A
F
E
D
G
B
G401A(-G93/G94)
G405A(G93/G94)

6853144

Trailering Systems Schematics (Trailer Brake and Trailer Connector Pin: C)


6853145
LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
F49UA 40A
X1 1
1242 RD/VT
J115
1242 RD/VT
K67 Trailer Brake Control Module
1
B+
9
5550 BK
G403
A104 Brake Master Cylinder
K160 Brake System Control Module
19
20
2224 YE/BK
24
2224 YE/BK
5
2223 WH/BK
25
X101
2223 WH/BK
2
2733 GN/BU
12
8
47 BU
C
X88B Tow Vehicle Electrical Receptacle
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
2733 GN/BU
2
S76 Trailer Brake Control Switch
A90 Logic
X51A Instrument Panel Wiring Harness Junction Block
F24DA 5A
X1 34
4040 RD/VT
1
B+
3
2050 BK
G200

Trailering Systems Schematics (Trailer Brake Provisions)


B+
X50A Engine Wiring Harness Junction Block
F49UA 40A
X4 3
4142 RD/BN
J106
X301 2
X88B Tow Vehicle Electrical Receptacle
C
47 BU
1
X101 14
K9 Body Control Module
X3 24
3691 WH/BU
22 WH
G200
W24 Blunt Cut - Trailer Brakes Provision

6853146

Description and Operation

Trailering Description and Operation

Trailering System Overview

Begin the trailering system diagnosis with [Link target (target-id 325938-) not found] . The Diagnostic System Check - Trailering will provide a complete strategy to locate and repair a vehicle trailering electrical fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The trailering system consists of the following:

- Trailer Lighting, refer to [Link target (target-id 326023-) not found] for additional diagnostic information.
- {JL1} Trailer Brakes, refer to [Link target (target-id 326020-) not found] for additional diagnostic information.
- Trailer Battery Charging System, refer to [Link target (target-id 326019-) not found] for additional diagnostic information.
- Trailer Detection, refer to [Link target (target-id 326022-) not found] for additional diagnostic information.
- Trailer Theft Detection.

7–Terminal Tow Vehicle Electrical Receptacle Pinout

- Terminal A – Trailer Backup Lamp Control
- Terminal B – Ground
- Terminal C – Trailer Brake Control
- Terminal D – Right Trailer Stop/Turn Signal Lamp Control
- Terminal E – B+
- Terminal F – Trailer Park Lamp Control
- Terminal G – Left Trailer Stop/Turn Signal Lamp Control

Connecting Aftermarket Accessories

- Some aftermarket accessories that connect to the X88B Tow Vehicle Electrical Receptacle will be recognized by the vehicle as a trailer connected, even if the accessory is not a trailer. As a result, side blind zone detection, rear park assist, and/or rear cross traffic alert will be turned off anytime the vehicle detects a trailer/accessory is connected.
- Vehicles equipped with U1D/UET have trailer theft detection that constantly monitors trailer connected status when enabled. This is done by randomly pulsing the lighting circuits of the trailer when the vehicle is parked. As a result, some aftermarket accessories may be turned ON/OFF when connected to the vehicle with theft detection enabled.
- Vehicles equipped with U1D/UET use pulse width modulation voltage (PWM) for trailer lighting functions. Some aftermarket accessories are incompatible with PWM and may not function correctly when connected to the trailer lighting circuits of the vehicle.

Trailer Battery Charging System

Trailer battery charging is accomplished through constant battery voltage from the X50A Engine Wiring Harness Junction Block to the X88B Tow Vehicle Electrical Receptacle. Battery voltage is supplied to terminal E at the X88B Tow Vehicle Electrical Receptacle at all times. If equipped, the trailer battery will constantly be charged by the vehicle’s electrical system anytime the trailer is connected. Some trailers require the B+ circuit to the X88B Tow Vehicle Electrical Receptacle for the trailer brakes to function.

Trailer Lighting and Detection With U1D/UET

Note:

- Some trailers utilize a trailer mounted control module to operate some or all of the trailer lights. These trailers may use the B+ circuit from the trailer connector to power the trailer lighting circuits. These trailers may not always be detected by the Trailer Lamp Control Module and may set faults.
- When a trailer is detected on a vehicle equipped with side blind zone detection, rear park assist, and/or rear cross traffic alert, the vehicle will automatically turn these features off. These features are turned off to prevent false detections due to the trailer obstructing the view of the sensors.
- Vehicles equipped with IOR/1FL do not come equipped with the trailering APP however may still be equipped with a K68 trailer Lamp Control Module.

The K68 Trailer Lamp Control Module is responsible for controlling the trailer lighting on vehicles with U1D/UET. The combined trailer stop/turn signal lamps of the trailer must draw at least 55mA of total current to be detected as a trailer or the Trailer Lamp Control Module will not control the lighting circuits. The Trailer Lamp Control Module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The Trailer Lamp Control Module responds by applying pulse width modulated voltage (PWM) to the appropriate control circuits for the requested lamps illuminating the lamps on the attached trailer. The Trailer Lamp Control Module constantly monitors for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes. This is accomplished through the lighting circuits of the trailer to determine if a trailer is connected. When a trailer is connected, the Trailer Lamp Control Module senses the trailer connection and alerts the driver by requesting a trailer profile setup through the Trailering App, which is displayed on the infotainment screen. If a trailer is disconnected with the ignition ON, the vehicle will display multiple trailer lighting messages until a trailer is reconnected or the message is dismissed by the user. With the key OFF, the Trailer Lamp Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. The lights on the trailer may flash at different intervals with the key OFF depending on which type of lights the trailer is built with. If a trailer is disconnected with the key ON, the vehicle will display a trailer disconnected message until a trailer is reconnected or the ignition is cycled.

Trailer Lighting Without U1D/UET

The K219 Lighting Control Module is responsible for controlling the trailer lighting on vehicles without U1D/UET. The lighting control module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The lighting control module responds by applying voltage to the appropriate relay control circuits for the requested lamps anytime the vehicle lamps are commanded ON. With the relay coil energized, the relay contacts close and allow voltage to flow through the relay illuminating the appropriate lamps on the attached trailer.

Trailer Messages

The driver information center (P16 Instrument Cluster) or infotainment screen (P17 Info Display Module) may display one or more of the following messages to the user related to trailering:

Trailering Message	Description
Check Trailer Left Turn Signal Lamp	The K68 Trailer Lamp Control Module detects a fault on the left trailer stop/turn lamp control circuit
Check Trailer Right Turn Signal Lamp	The K68 Trailer Lamp Control Module detects a fault on the right trailer stop/turn lamp control circuit
Check Trailer Rear Lamp	The K68 Trailer Lamp Control Module detects a fault on the trailer park lamp control circuit.
Check Trailer Reversing Lamp	The K68 Trailer Lamp Control Module detects a fault on the trailer backup lamp control circuit.
Check Trailer Brake Lamps	The K68 Trailer Lamp Control Module detects a fault on the left and/or right trailer stop/turn lamp control circuits
{JL1} Check Trailer Wiring	The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit or the trailer was disconnected.
Lane Change Alert Off	Reminder to the user that lane change alerts are turned off anytime a trailer is detected.
Rear Cross Traffic Alert Off	Reminder to the user that rear cross traffic alerts are turned off anytime a trailer is detected.
Rear Park Assist Off	Reminder to the user that rear park assist is turned off anytime a trailer is detected.
Remember to turn On Tow/Haul Mode	Reminder to the user to turn ON Tow/Haul Mode when towing.
{JL1} Service Trailer Brake System	The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit.
Trailer Detected	The K68 Trailer Lamp Control Module detects a trailer has been connected to the X88B Tow Vehicle electrical Receptacle.
{JL1} Trailer Brakes Detected	The K67 Trailer Brake Control Module detects a trailer with trailer brakes has been connected to the X88B Tow Vehicle electrical Receptacle.
Trailer Disconnected Check Connection	The K68 Trailer Lamp Control Module detects a trailer has been disconnected from the X88B Tow Vehicle electrical Receptacle.

Trailer Theft Detection (With U1D/UET Only)

Trailer theft monitoring can be turned ON and OFF through the vehicle Trailer App. When enabled, any time the trailer theft deterrent system is armed, the trailer lighting circuits are constantly monitored to determine if a trailer is connected for trailer theft deterrent purposes. With the key OFF, the K68 Trailer Lamp Control Module will randomly pulse the lighting circuits of the trailer to verify it is still connected by monitoring the voltage drop of the circuit. Depending on the configuration of the trailer lights, the trailer lights may randomly flash as part of the trailer theft deterrent function. These flashes correspond to when the K68 Trailer Lamp Control Module pulses the lighting circuits to ensure the trailer is still connected and is considered normal. If the trailer is disconnected while the trailer theft deterrent system is armed, the vehicle will flash the exterior lights and cycle the horn to alert of a trailer theft event. Refer to *Theft Systems Description and Operation 9-53* for more information on the content theft deterrent system.

Trailer Brakes (JL1)

The vehicle is equipped with the following trailer braking components:

- K160 Brake System Control Module
- K67 Trailer Brake Control Module
- S76 Trailer Brake Control Switch
- Trailer Brake Driver Information Center Display

Trailer Brake Circuits

- Circuit 2223 is the trailer brake apply signal circuit. The K160 Brake System Control Module receives vehicle braking force data and/or data from the application of the manual trailer brake slide lever. The brake system control module responds by applying the appropriate amount of pulse width modulated (PWM) voltage based on the amount of trailer brake application desired. The K67 Trailer Brake Control Module responds to the signal circuit by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit 47.
- Circuit 2224 is the trailer brake enable signal circuit. The K160 Brake System Control Module applies voltage to the enable circuit anytime a LIN data communication fault is not present, a trailer is connected, and the vehicle brakes are being applied. The enable circuit must have voltage applied to it before the K133 Trailer Brake Control Module applies the appropriate amount of pulse width modulated (PWM) voltage to the trailer auxiliary control circuit 47.
- Circuit 2733 is the brake system control module LIN bus 2 circuit. The K160 Brake System Control Module, K67 Trailer Brake Control Module, and the S76 Trailer Brake Control Switch all communicate through the brake system control module LIN bus 2 circuit. If the LIN bus has a fault on the circuit, trailer braking will be disabled until the fault is repaired.
- Circuit 47 is the trailer auxiliary control circuit. The K133 Trailer Brake Control Module responds to signal circuit 2223 and enable circuit 2224 by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit. A properly functioning trailer will apply the appropriate amount of braking force to the brakes of the trailer.

The Trailer Brake Control System is compatible with two types of Trailer Brake Systems as listed below:

1. **Electric Brakes** A controlled electrical output signal energizes an electric-magnet/lever arm assembly that directly actuates the brake mechanism. The GDS name for this system is “Electromagnetic Brakes”.
2. **Electric Over Hydraulic Brakes** A controlled electrical output signal energizes a remote, trailer mounted hydraulic pump to build brake pressure in a closed hydraulic system on the trailer. The hydraulic fluid pressure actuates the brake mechanism. The GDS name for this system is “Electrohydraulic Brakes”.

Trailer Brake Output Versus Trailer Brake Type

- The trailer brake system characterizes the trailer brakes as either Electric Brake or Electric Over Hydraulic Brake automatically. This characterization may be affected by the number, type, and age of the trailer brake magnets, as well as any other devices installed on the trailer brakes (i.e. adapters for Electric Over Hydraulic brake functionality).
- The trailer brake system is fully operational with either characterization.
- Sliding the manual trailer brake apply lever will produce output at zero speed for either characterization.

The user gain allows the driver to adjust the amount of trailer brake output to match the trailer load and road surface. The controller determines the desired trailer brake output and provides a control signal to the K67 Trailer Brake Control Module (TBPM). The K67 Trailer Brake Control Module amplifies the signal and provides the output required to activate the Electric or Electric Over Hydraulic trailer brakes.

The trailer brake control can support up to a maximum of four axles with electric trailer brakes (8 brake magnets).

Connecting a trailer that is not compatible with the trailer brake system may result in reduced or complete loss of trailer braking. There may be an increase in stopping distance or trailer instability which could result in personal injury or damage to the vehicle, trailer or other property. An aftermarket controller may be available for use with incompatible trailer brake systems.

To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer. Do not power up an aftermarket controller with the factory brake controller at the same time.

Trailer Brake Control Panel

The S76 Trailer Brake Control Switch contains the trailer gain and manual apply switches. It is located in the vehicle center stack. Refer to the owner's manual for more information on the location. The control panel and switches allows you to adjust the amount of output, referred to as trailer gain, available to the Electric or Electric Over Hydraulic brakes. It also allows you to manually apply the trailer brakes. The trailer brake control switch is used along with the trailer brake display page on the driver information center to adjust and display power output to the trailer brakes.

Manual Trailer Brake Apply

The manual trailer brake apply lever is located on the S76 Trailer Brake Control Switch and is used to apply the trailer's Electric or Electric Over Hydraulic brakes independent of the vehicle's brakes. This lever is used in the trailer gain adjustment procedure to properly adjust the power output to the trailer brakes.

Sliding the lever will apply only the trailer brakes. The power output to the trailer is indicated in the trailer brake display page in the Driver Information Center (DIC). If the vehicle's service brakes are applied while using the manual trailer brake apply lever, the trailer brake control output power will be the greater of the two.

The trailer and the vehicle's brake lamps will come on when either the vehicle's braking or manual trailer brakes are applied.

Trailer Brake Gain Adjustment

Trailer gain should be set for a specific trailering condition and must be adjusted any time vehicle loading, trailer loading or road surface conditions change. It is important to re-adjust trailer gain any time the tow vehicle, trailer loading or road surface conditions change or if you notice trailer wheel lock-up at any time while you are towing.

Setting the trailer gain properly is needed for the best trailer stopping performance. A trailer that is over-gained may result in locked trailer brakes. A trailer that is under-gained may result in not enough trailer braking. Both of these conditions may result in poor stopping and stability of the vehicle and trailer.

Trailer Gain Adjustment Procedure

- Adjust trailer gain in 0.5 step increments up to 10 gain setting by using the gain adjustment +/− buttons on the trailer brake control panel switch. Pressing and holding a gain button will cause the trailer gain to continuously increment or decrement. To turn the output to the trailer off, set the gain to zero.
- Drive the tow vehicle and trailer combination on a level surface representative of the towing condition and free of traffic at approximately 32–40 km/h (20–25 mph) and fully apply the manual trailer brake apply lever mechanism located on the trailer brake control panel switch. Adjusting the trailer gain at slower speeds may result in an incorrect gain setting.
- Adjust the trailer gain to just below the threshold of trailer wheel lock-up . Trailer wheel lock-up may not occur if towing a heavily loaded trailer. In this case, adjust the trailer gain to the highest allowable setting for the towing condition.

Trailer Brake Gain and Output Display

This display menu can be accessed by scrolling through the DIC menu, or any time the trailer gain +/− button is depressed, or the manual trailer brake apply lever is actuated. The trailer output is displayed from 0 to full output and indicates the output power provided to the trailer brakes, relative to the gain setting.

After the electrical connection is made to a trailer equipped with electric brakes or electric over hydraulic brakes, the TRAILER CONNECTED message will be displayed momentarily on the DIC. The Trailer Brake Display Page can be selected on the DIC showing TRAILER GAIN and OUTPUT, after all vehicle related service messages are acknowledged by the driver. Depending on which instrument panel cluster is in the vehicle, the DIC may display dashed lines, a greyed out display, or it may be blank signifying a disconnected trailer or a trailer brake fault condition.

Tow/Haul Mode

Tow/Haul mode is selected through the hazard warning switch for hauling heavy loads to provide increased performance and vehicle control. Tow/Haul Mode adjusts the transmission shift pattern, steering, and Electronic Stability Contol (ESC) performance.

If the vehicle is turned off with Tow/Haul mode active and then restarted within four hours or less Tow/Haul will remain active. Otherwise, the vehicle will start in Normal mode.

Trailer Brake Driver Information Center Indicators and Messages

Trailer Brake Detection

The K67 Trailer Brake Control Module constantly monitors the trailer auxiliary control circuit from Terminal C at the X88B Tow Vehicle electrical Receptacle. When a trailer is connected with trailer brakes, the K67 Trailer Brake Control Module senses the connection and alerts the driver with a Trailer Connected message. If the K67 Trailer Brake Control Module senses a fault, or the trailer becomes disconnected, the vehicle will alert the driver with a Check Trailer Wiring message.

The following indicators are used to inform the driver of several different conditions:

Trailer Connected

This message will be briefly displayed when a trailer with Electric or Electric Over Hydraulic brakes is first connected to the vehicle. This message will automatically turn off in about ten seconds. The driver can also acknowledge this message before it automatically turns off.

Check Trailer Wiring

This message will be displayed if:

- The system detects that a trailer with Electric or Electric Over Hydraulic brakes is connected to the vehicle and then the trailer harness becomes disconnected from the vehicle.
- The trailer connection is recognized initially and then a disconnect occurs while the vehicle is stationary. This message will automatically turn off in about thirty seconds. This message will also turn off if the driver selects to turn this message off or if the trailer harness is reconnected.
- A disconnect of the trailer wiring harness occurs while the vehicle is moving. The Check Trailer Wiring message will continue until the ignition is turned off. The message will also turn off if the driver selects to turn this message off or it the trailer harness is re-connected.
- There is an electrical fault in the wiring to the electric trailer brakes. The Check Trailer Wiring message will continue as long as there is an electrical fault in the trailer wiring. This message will also turn off if the driver acknowledges this message off.
- A poor connection at the 7–way connector may cause the Check Trailer Wiring message. Some aftermarket 7–way trailer side connector adapters or plugs may cause deformation or excessive wear to the vehicle’s trailer terminals. It is recommended that you use an OEM or Pollak heavy duty 7–way trailer side connector adapter.

Service Trailer Brake System

This message will be displayed when there is a problem with the trailer brake control system. The trailer brake system may not be fully functional, or may not be functioning at all. The trailer brake system is designed to provide trailer braking, if possible, even when faults prevent it from being fully functional. This reduced functionality includes:

1. Providing trailer braking when the master cylinder pressure or brake pedal switch are faulted.
2. Providing trailer braking when hill start assist and trailer sway control communication is faulted.
3. Providing trailer braking when certain manual trailer brake apply lever faults are present.

Trailering Diagnostic Tools

In some situations when diagnosing trailer tire pressure monitoring, trailer lighting, or integrated trailer brakes, it may be necessary to connect the vehicle to a trailer to confirm proper operation. Performing this activity may prove difficult in the service environment since trailers are not often available for diagnostic use, may have existing electrical issues outside of the issues a technician is attempting to diagnose, or simply may be too unwieldily to connect for diagnosis.

With all this in mind, it may be helpful to build or create a tool that can be plugged into the vehicle’s trailer connector and simulate a connected trailer. This tool would include park lamps, stop lamps, and a reverse lamp for lighting and trailer tire pressure monitoring diagnosis. It can be expanded to include trailer brake magnets to diagnose integrated trailer brake concerns. Also, an additional lamp can be included to diagnose the B+ circuit to the trailer.

Trailer issues are NOT covered under warranty, but these tools may be used to verify the vehicle is functioning properly and to help the customer understand and correct any trailer related issues if they so choose.

Available Trailer Presence Simulator Tool

Illustration	Tool Number/Description
5166189	*EL-52641* Trailer Presence Simulator Tool

Simulated Trailer Lighting

Creating a tool to simulate a connected trailer can be used to diagnose issues with trailer lighting, trailer brake (if equipped), the Trailering App (if equipped), and trailer tire pressure monitoring system (if equipped).

If the vehicle is equipped with a K68 Trailer Lamp Control Module (U1D/UET), the module monitors the current on the lighting circuits to determine a trailer has been connected. The Trailer Lamp Control Module pulses current on the trailer lighting circuits every 42 minutes to monitor for a connected trailer. If a current draw greater than 55mA is detected, the Trailer Lamp Control Module recognizes this as a connected trailer. This will enable any trailer lighting controlled by the Trailer Lamp Control Module. The Center Stack Module will also use this trailer detection as a cue to enable the Trailering App and trailer tire pressure monitoring functions.

Creating a Simulated Trailer Lighting Tool
Parts needed:

- 7-way RV trailer connector Qty: 1

Note: The combination trailer stop/turn, and backup lamps must draw at least 55mA of total current to be detected as a trailer. Some LED combination lamps will not draw enough current. If an LED combination lamp is used, make sure it draws at least 55mA. A load resistor can be added to the circuit if necessary to obtain the correct load.

- Combination trailer park/stop/turn lamp (greater than 55mA drawn when on) Qty: 2
- Reverse lamp Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed
- 18 gauge wire and terminals/connectors Qty: As needed
- Mounting board Qty: 1

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector and the ground circuit of each combination trailer park/stop/turn lamp and the reverse lamp in parallel.
2. Connect an 18 gauge wire between the park lamp terminal of the 7-way trailer connector and the park lamp circuit of each combination trailer park/stop/turn lamp in parallel.
3. Connect an 18 gauge wire between the left turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of left trailer park/stop/turn lamp.
4. Connect an 18 gauge wire between the right turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of right trailer park/stop/turn lamp.
5. Connect an 18 gauge wire between the reverse lamp terminal of the 7-way trailer connector and the reverse lamp.

Note: A combination trailer lighting and trailer brake tool can be created on the same mounting board.

6. Mount the left combination trailer park/stop/turn lamp, right combination trailer park/stop/turn lamp, and reverse lamp to the mounting board.
7. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

Simulated Trailer Brakes

Creating a tool to simulate trailer brakes can be used to diagnose trailer brake issues.

The trailer brake control system is compatible with two types of trailer brake systems: electromagnetic or electro-over hydraulic trailer brakes. The Brake System Control Module must determine which type of brakes the trailer is equipped with so the system can output correctly for the trailer's brake system. Because the Brake System Control Module has to determine the type of trailer brake system that is being used, it can be sensitive to a variety of trailer wiring issues.

The Trailer Brake Control Module continuously sends a test pulse out on the trailer brake control circuit (circuit 47) to determine if a trailer with trailer brakes has been connected. How the pulse reacts when a trailer is connected is how the Trailer Brake Control Module determines which type of braking system the trailer is equipped with.

Even after the system detects the trailer, Trailer Brake Control Module will continue to send this test pulse on the trailer brake control circuit, which now is monitoring both the truck and trailer circuitry. The trailer brake control circuit continues to be monitored for any faults so the driver can be notified of any issues that may occur within the truck or trailer, as well as, to determine when the trailer is disconnected from the truck.

Creating a Simulated Trailer Brake Tool

Parts needed:

- 7-way RV trailer connector Qty: 1
- Electric trailer brake magnets Qty: 2, 4, 6, or 8
- Reverse lamp Qty: 1
- Mounting board Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector.
2. Connect a 12 gauge wire to the brake controller output terminal of the 7-way trailer connector.

Note: The trailer brake magnets must be connected in parallel. Connecting in series will create an excessive current draw and disable the trailer brake system.

3. Connect the trailer brake magnets to the 12 gauge wires from the 7-way trailer connector in parallel.

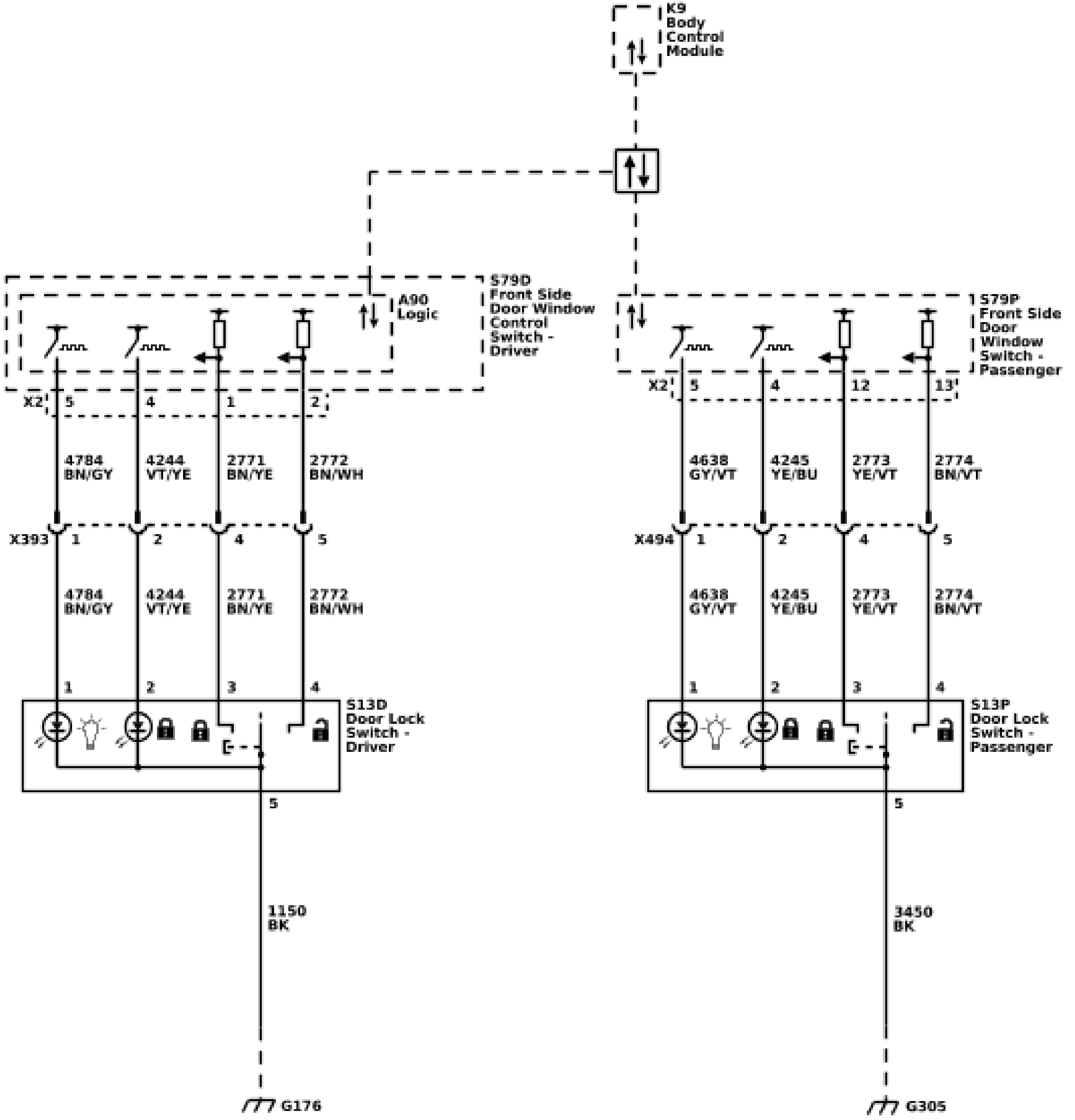
Note: A combination trailer lighting and trailer brake tool can be created on the same mounting board.

4. Mount the trailer brake magnets to the mounting board.
5. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

Vehicle Access

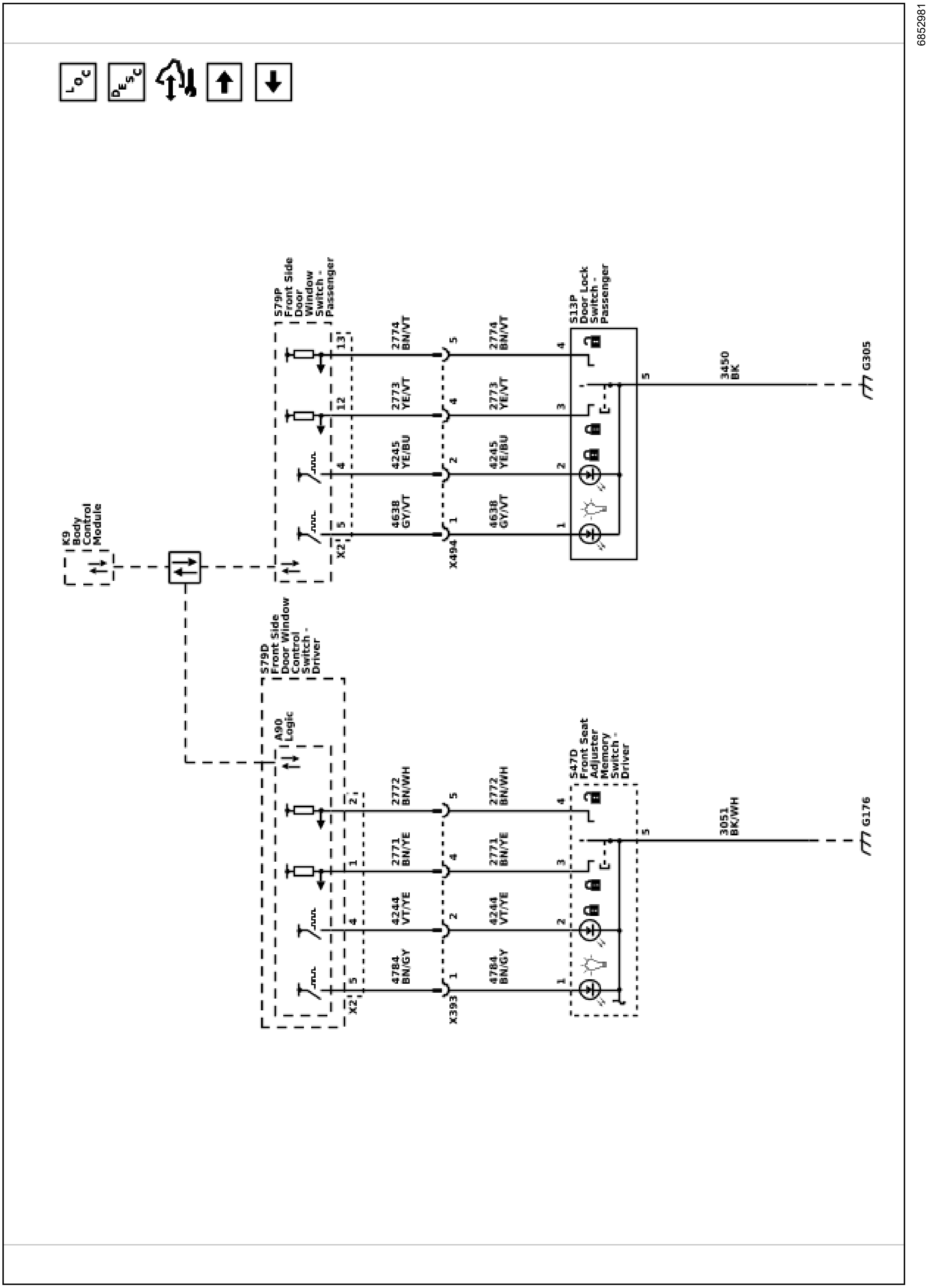
Schematic and Routing Diagrams

Door Lock/Indicator Schematics (Interior Control Switches and Indicators (- A45))


K9
Body
Control
Module
S79D
Front Side
Door Window
Control
Switch -
Driver
A90
Logic
S79P
Front Side
Door
Window
Switch -
Passenger
X2
5
4
1
2
12
13
4784
BN/GY
4244
VT/YE
2771
BN/YE
2772
BN/WH
4638
GY/VT
4245
YE/BU
2773
YE/VT
2774
BN/VT
X393
X494
S13D
Door Lock
Switch -
Driver
S13P
Door Lock
Switch -
Passenger
1150
BK
3450
BK
G176
G305

6852980

Door Lock/Indicator Schematics (Interior Control Switches and Indicators (A45))


6852981
LOC
DESC
K9 Body Control Module
S79P Front Side Door Window Switch - Passenger
X2
13
12
4
5
2774 BN/VT
2773 YE/VT
4245 YE/BU
4638 GY/VT
X494
5
4
2
1
S13P Door Lock Switch - Passenger
4
3
2
1
5
3450 BK
G305
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X2
2
1
4
5
2772 BN/WH
2771 BN/YE
4244 VT/YE
4784 BN/GY
X393
5
4
2
1
S47D Front Seat Adjuster Memory Switch - Driver
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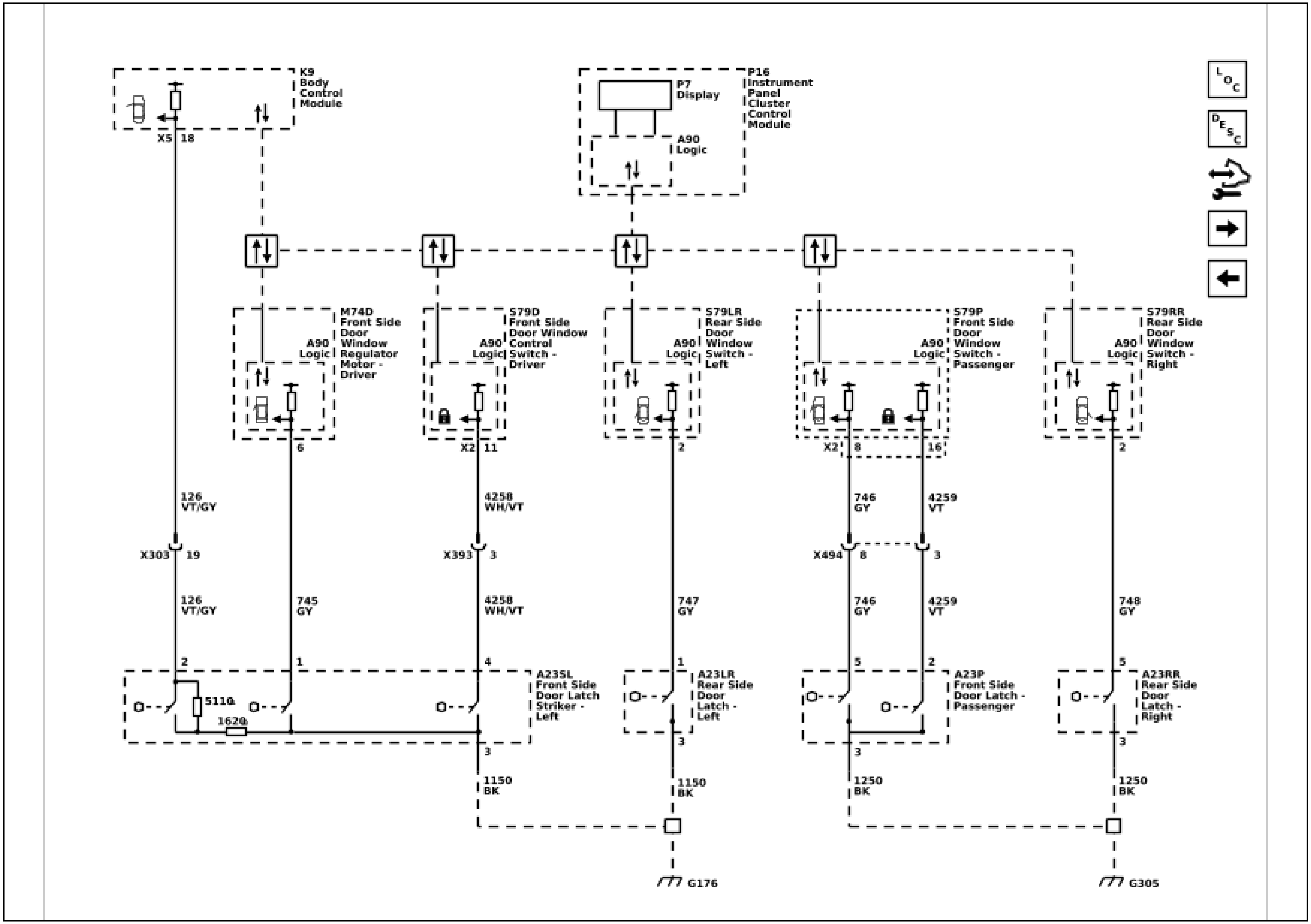
3
2
1
5
3051 BK/WH
G176

Door Lock/Indicator Schematics (Ajar Switches and Lock Status)


K9
Body
Control
Module
X5 18
P7
Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
M74D
Front Side
Door
Window
Regulator
Motor -
Driver
A90
Logic
6
S79D
Front Side
Door Window
Control
Switch -
Driver
A90
Logic
X2 11
S79LR
Rear Side
Door
Window
Switch -
Left
A90
Logic
2
S79P
Front Side
Door
Window
Switch -
Passenger
A90
Logic
X2 8 16
S79RR
Rear Side
Door
Window
Switch -
Right
A90
Logic
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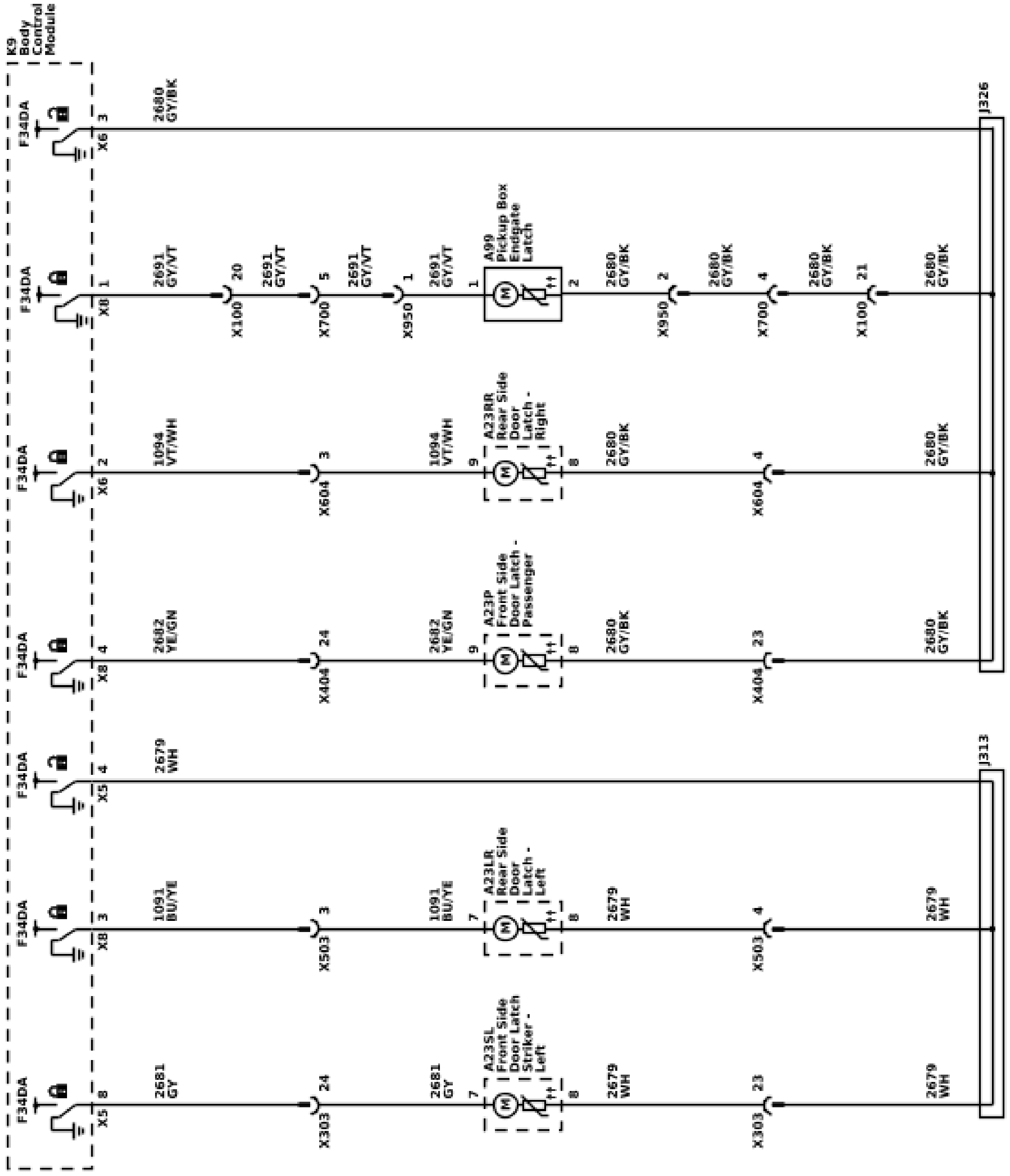
VT/GY
X303 19
126
VT/GY
745
GY
4258
WH/VT
X393 3
4258
WH/VT
747
GY
746
GY
X494 8
746
GY
4259
VT
3
4259
VT
748
GY
2
1
4
5110
1620
A23SL
Front Side
Door Latch
Striker -
Left
3
1150
BK
1
A23LR
Rear Side
Door
Latch -
Left
3
1150
BK
G176
5
2
A23P
Front Side
Door Latch -
Passenger
3
1250
BK
5
A23RR
Rear Side
Door
Latch -
Right
3
1250
BK
G305
6852982

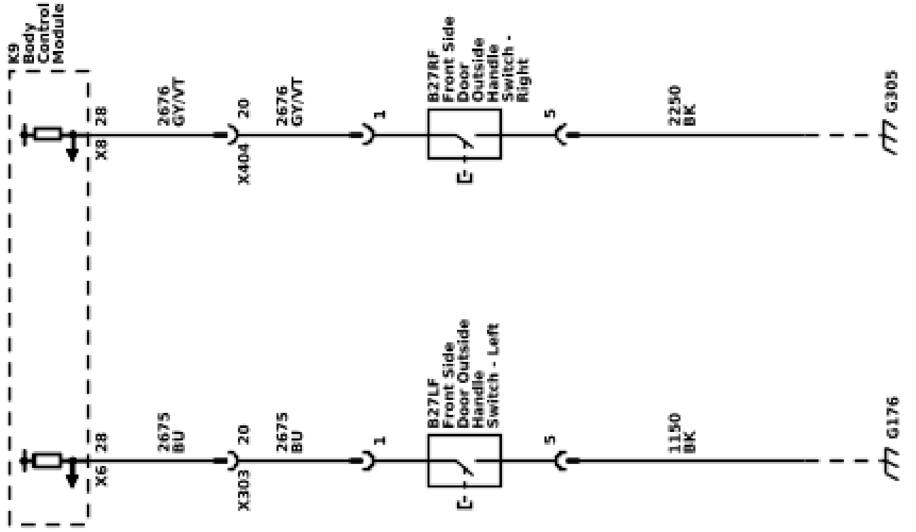
Door Lock/Indicator Schematics (Actuators)

6852983

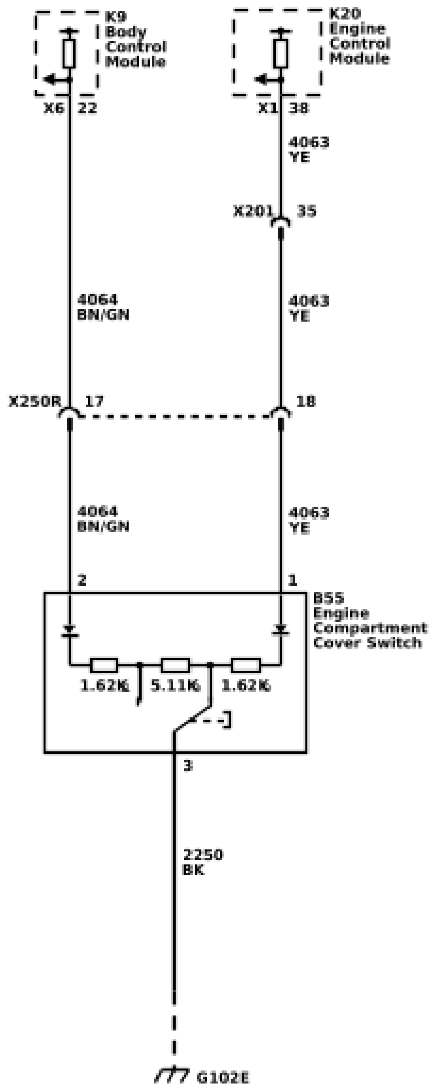

K9 Body Control Module
F34DA
X6 3
2680 GY/BK
J326
F34DA
X8 1
2691 GY/VT
X100 20
2691 GY/VT
X700 5
2691 GY/VT
X950 1
2691 GY/VT
1
A99 Pickup Box Endgate Latch
2
2680 GY/BK
X950 2
2680 GY/BK
X700 4
2680 GY/BK
X100 21
2680 GY/BK
F34DA
X6 2
1094 VT/WH
X604 3
1094 VT/WH
9
A23RR Rear Side Door Latch - Right
8
2680 GY/BK
X604 4
2680 GY/BK
F34DA
X8 4
2682 YE/GN
X404 24
2682 YE/GN
9
A23P Front Side Door Latch - Passenger
8
2680 GY/BK
X404 23
2680 GY/BK
F34DA
X5 4
2679 WH
J313
F34DA
X8 3
1091 BU/YE
X503 3
1091 BU/YE
7
A23LR Rear Side Door Latch - Left
8
2679 WH
X503 4
2679 WH
F34DA
X5 8
2681 GY
X303 24
2681 GY
7
A23SL Front Side Door Latch Striker - Left
8
2679 WH
X303 23
2679 WH

Door Lock/Indicator Schematics (Door Handle Switches)

6852984


K9 Body Control Module
X8 28
2676 GY/VT
X404 20
2676 GY/VT
1
B27RF Front Side Door Outside Handle Switch - Right
5
2250 BK
G305
X6 28
2675 BU
X303 20
2675 BU
1
B27LF Front Side Door Outside Handle Switch - Left
5
1150 BK
G176

Hood Latch Schematics (Engine Compartment Cover Switch)


K9
Body
Control
Module
X6 22
K20
Engine
Control
Module
X1 38
4063
YE
X201 35
4064
BN/GN
4063
YE
X250R 17
18
4064
BN/GN
4063
YE
2
1
B55
Engine
Compartment
Cover Switch
1.62K
5.11K
1.62K
3
2250
BK
G102E

6853045

Description and Operation

Door Ajar Indicator Description and Operation

Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Driver side door window switch
- Passenger side door window switch
- Left rear side door window switch
- Right rear side door window switch

Door Ajar Indicator Operation

The side door window switches each provide a 7.5 V signal to their respective door ajar switch signal circuits. The door ajar switches are integral to each door latch assembly. When a door is opened, the normally open door ajar switch closes. With the door ajar switch closed, ground is provided to the door ajar switch signal circuit and the voltage within the signal circuit drops. The appropriate side door window switch will detect the voltage drop and will send a serial data message to the body control module which will then send a message to the instrument cluster to command the door ajar message.

Door Ajar Indicator Description and Operation

Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Driver window motor
- Passenger side door window switch
- Left rear side door window switch
- Right rear side door window switch

Driver Door Ajar

The window motor supplies a 12V signal to the door ajar switch within the door latch, when a door is open the door ajar switch closes pulling the 12V signal low. When the window motor detects the drop in the 12V signal circuit, it will then communicate this status to the BCM via local interconnect network (LIN) bus. The BCM communicates with the instrument cluster via serial data message. The instrument cluster, upon receipt of this serial data message, will illuminate the door ajar indicator and also send a serial data message to the radio to activate the door ajar audible warning when the vehicle speed is greater than 8 km/h (5 mph).

Passenger and Rear Doors Ajar

The passenger and rear side door window switches each provide a 12V signal to their respective door ajar switch signal circuits. The passenger and rear door ajar switches are integral to each door latch assembly. When the passenger door or a rear door is opened, the normally open door ajar switch closes. With the door ajar switch closed, ground is provided to the door ajar switch signal circuit and the voltage within the signal circuit drops. The passenger or rear side door window switches will detect the voltage drop and will send a serial data message to the body control module which will then send a message to the instrument cluster to command the door ajar message.

Endgate Description and Operation

Endgate Lock System Components

- Body control module (BCM)
- Pickup box endgate latch

If equipped, the locking and unlocking of the endgate is a function of the power door lock system. The pickup box endgate latch unlock control is supplied by the passenger door unlock control circuit and the rear closure actuator lock control circuit. The BCM, upon receipt of a lock switch lock or unlock signal, will supply battery voltage to the passenger door lock actuator unlock or rear closure actuator lock control circuits. Since the opposite side of the lock actuator is connected to ground through the other lock actuator control circuit, the passenger door and endgate will then lock or unlock as commanded.

Hood Ajar Indicator Description and Operation

Hood Ajar Switch

Hood Status A

The engine control module (non electric vehicle or hybrid vehicle) or battery energy control module (electric vehicle) applies approximately 5V to the hood status A signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage is pulled low.

When the hood is closed, the switch is closed and the voltage remains high.

The engine control module or battery energy control module will not allow the vehicle to shift out of park if the hood status is not closed.

Hood Status B
The body control module (BCM) applies approximately 5V to the hood status B signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage remains high. When the hood is closed, the switch is closed and the voltage is pulled low.

The BCM uses the hood ajar status as a content theft deterrent alarm trigger.

Hood Ajar Indicator/Message

If either hood status signal shows the hood is ajar or if there is a fault in either hood status signal circuit a message is displayed on the DIC or the hood ajar indicator will be illuminated.

Power Door Locks Description and Operation

Door Lock System Components

The power door lock system consists of the following components:

- Driver door lock switch
- Passenger door lock switch
- Driver front side door window control switch
- Passenger front side door window switch
- Driver front side door latch
- Passenger front side door latch
- Left rear side door latch
- Right rear side door latch
- Pickup box endgate latch (A91)
- Exterior door handle switches (AVJ)
- Body control module

Door Lock System Controls

The power door lock system can be controlled by any of the following:

- Power door lock switch activation
- Keyless entry lock or unlock command
- Delayed locking command
- Automatic door lock command
- When the OnStar® system is used to unlock the driver door

Door Lock and Unlock Operation

The driver or passenger front side door window control switch will monitor the voltage of their respective door lock switches, when the driver or passenger door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the corresponding front side door window control switch will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The body control module upon receipt of a lock or unlock request, will supply battery voltage to the door lock actuator and if equipped the endgate latch lock or unlock control circuits. Since the opposite side of the lock actuator is connected to ground through the other lock actuator control circuit, the doors, and fuel filler door will then lock or unlock as commanded.

The following control circuits are used to operate the door lock actuators:

- Driver door unlock only
- Passenger and rear door unlock
- All door lock

This sequence and be modified through the personalization settings

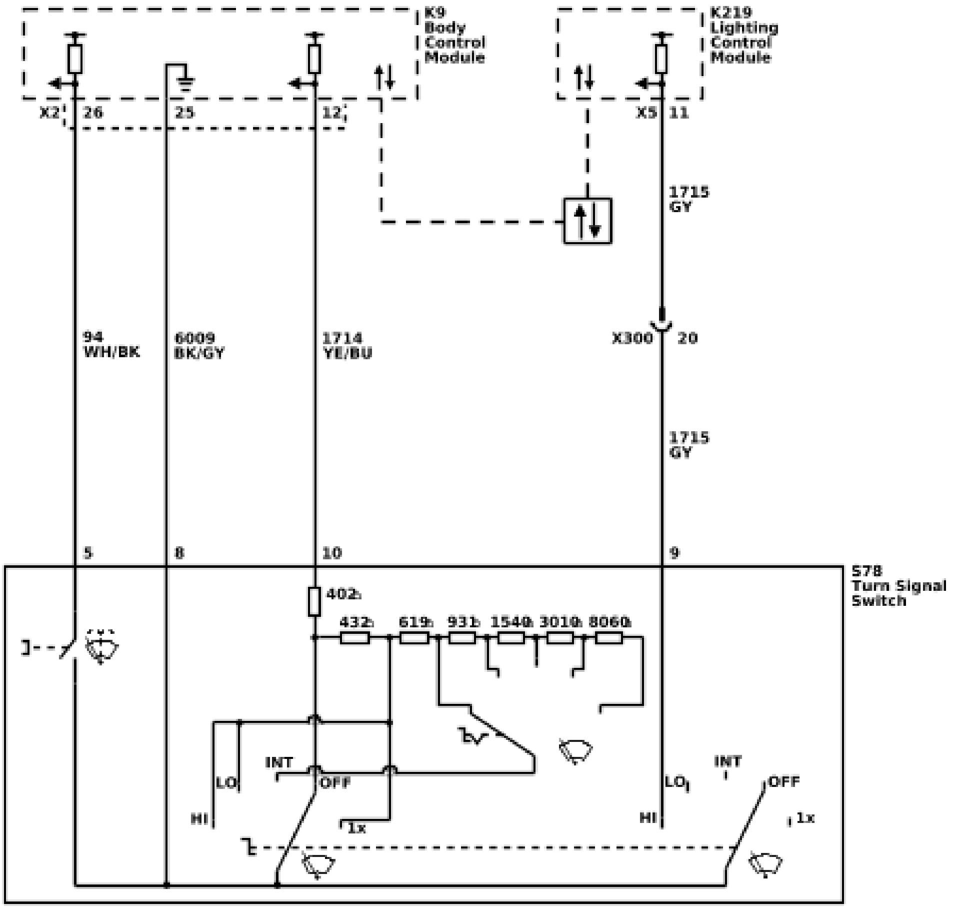
Passive Door Lock/Unlock Operation (AVJ)

The exterior door handle switch signal circuits provide inputs to the body control module when the exterior door handle switches are activated. These inputs allow the body control module to detect a door lock or a door unlock request. The body control module provides a 7 V signal to each exterior door handle switch via the door handle switch signal circuits. When a door handle switch is pressed, the switch closes and the voltage signal within the signal circuit is pulled to ground. The body control module will detect the voltage drop and a low frequency antenna will transmit a challenge to the keyless entry transmitter. If the challenge is met, the keyless entry transmitter will respond, and the body control module will command the door(s) to be locked or unlocked

Wipers and Washers

Schematic and Routing Diagrams

Wiper/Washer Schematics (Wiper/Washer Control)


K9
Body
Control
Module
K219
Lighting
Control
Module
X2 26
25
12
X5 11
1715
GY
X300 20
1715
GY
94
WH/BK
6009
BK/GY
1714
YE/BU
5
8
10
9
S78
Turn Signal
Switch
402Ω
432Ω
619Ω
931Ω
1540Ω
3010Ω
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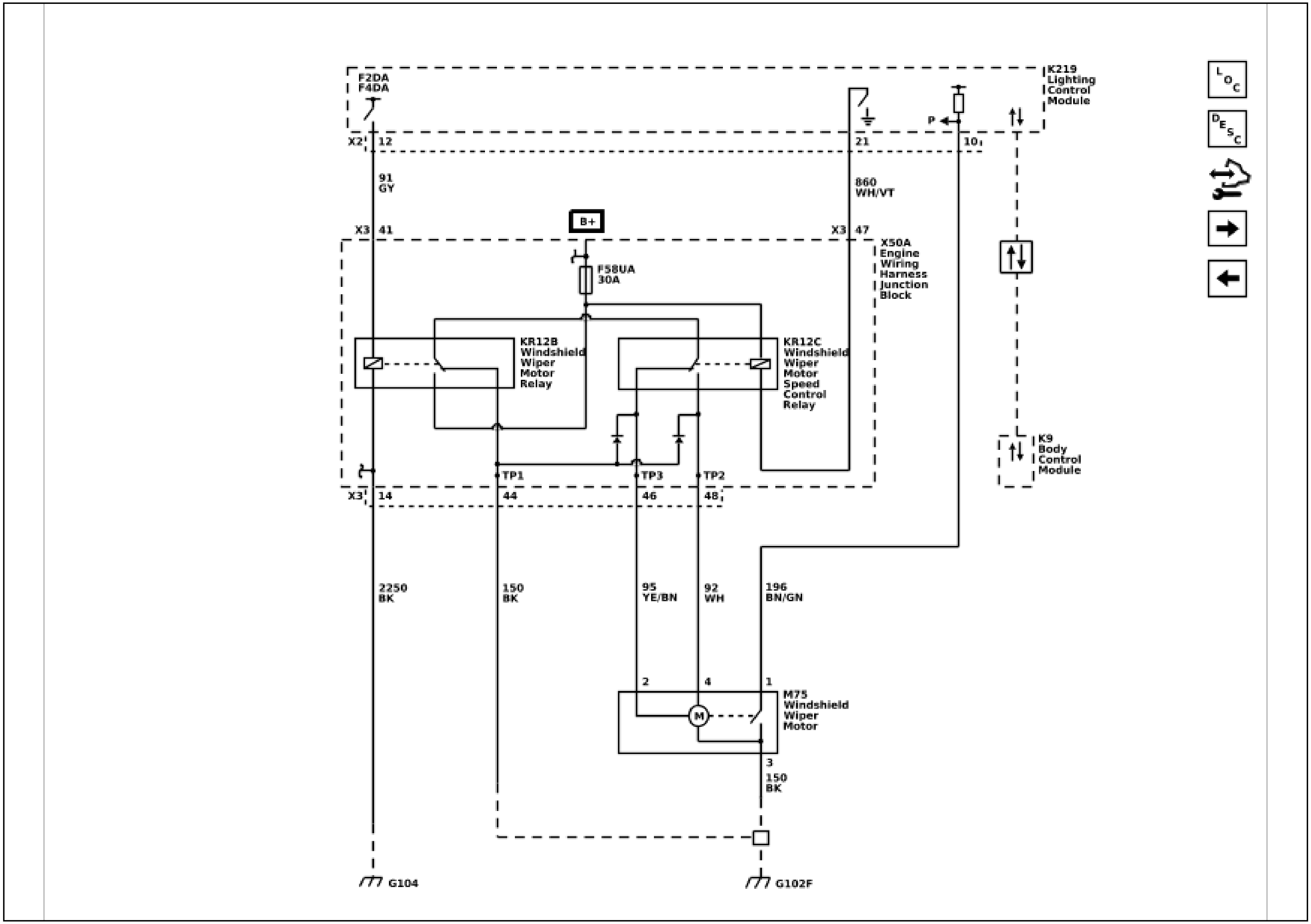
HI
OFF
1x
LO
HI
INT
OFF
1x

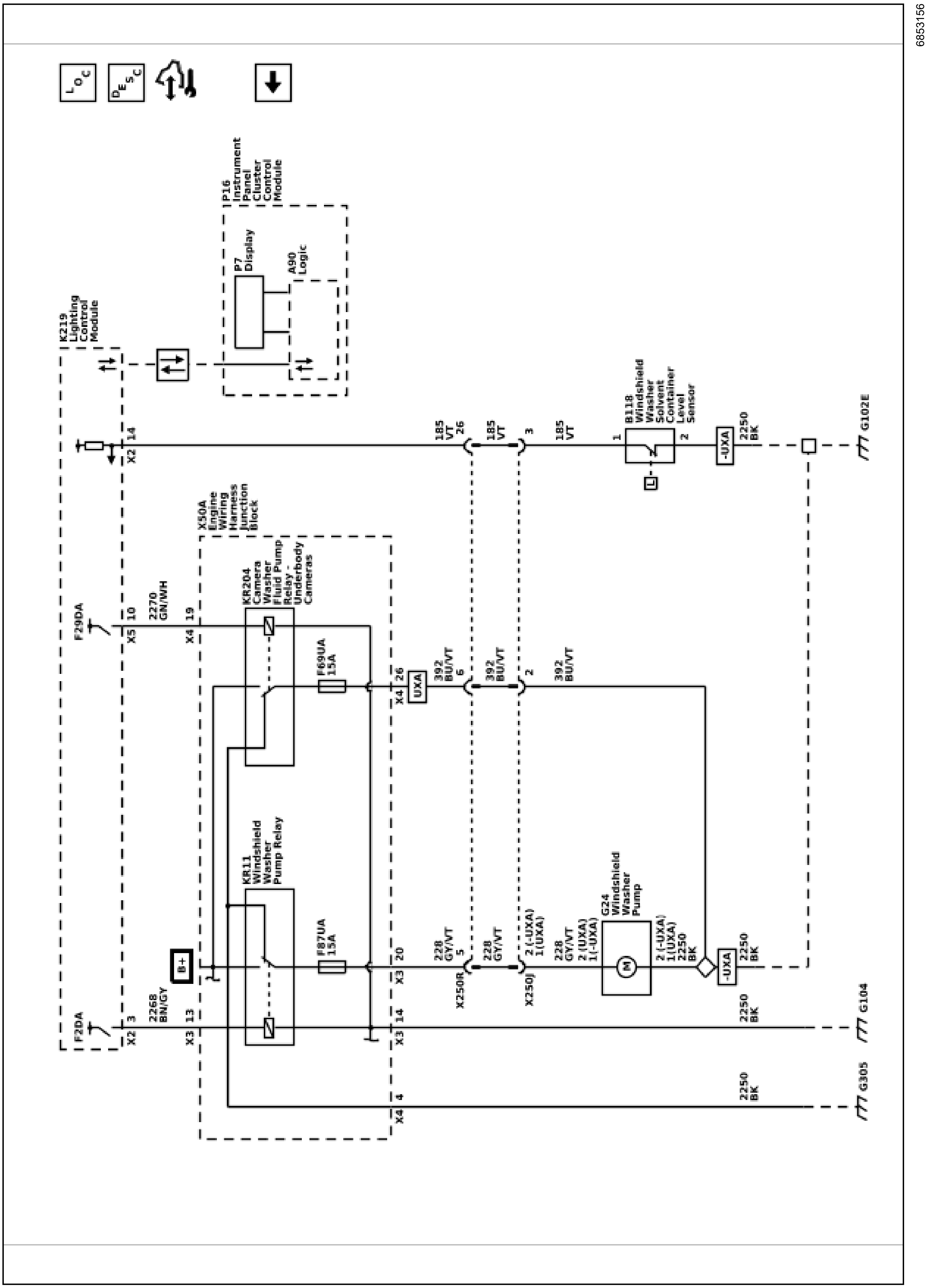
6853154

Wiper/Washer Schematics (Wiper Motor)


K219
Lighting
Control
Module
F2DA
F4DA
X2
12
21
10
P
91
GY
860
WH/VT
B+
X3
41
47
X50A
Engine
Wiring
Harness
Junction
Block
F58UA
30A
KR12B
Windshield
Wiper
Motor
Relay
KR12C
Windshield
Wiper
Motor
Speed
Control
Relay
K9
Body
Control
Module
TP1
TP3
TP2
14
44
46
48
2250
BK
150
BK
95
YE/BN
92
WH
196
BN/GN
2
4
1
M
M75
Windshield
Wiper
Motor
3
150
BK
G104
G102F

6853155

Wiper/Washer Schematics (Washer Pump)


6853156
LOC
DESC
K219 Lighting Control Module
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
F2DA
F29DA
X2 3
X2 14
X5 10
X3 13
X4 19
2268 BN/GY
2270 GN/WH
B+
X50A Engine Wiring Harness Junction Block
KR204 Camera Washer Fluid Pump Relay - Underbody Cameras
KR11 Windshield Washer Pump Relay
F69UA 15A
F87UA 15A
X4 26
UXA
X3 20
X3 14
X4 4
185 VT
26
3
392 BU/VT
6
2
228 GY/VT
5
2 (-UXA)
1 (UXA)
X250R
X250J
B118 Windshield Washer Solvent Container Level Sensor
1
2
G24 Windshield Washer Pump
2 (UXA)
1 (-UXA)
2 (-UXA)
1 (UXA)
M
-UXA
2250 BK
G102E
G104
G305

Description and Operation

Wiper/Washer System Description and Operation

Windshield Wiper Operation

The windshield wipers system allows the driver to clear the vehicle’s windshield using a discrete switch or through an automatic rain sensing system. The windshield wiper system functions through a primary control, but also allows redundant high speed-only operation in the event of a system fault. The wiper systems uses the S82 Windshield Wiper/Washer Switch as the primary means of driver control, along with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to modulate intermittent wiper operation. The S82 Windshield Wiper/Washer Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, and with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor over LIN, to control wiper activation.

Low Speed Wiper Operation
With the S82 Windshield Wiper/Washer Switch in the low speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, requesting consistent low speed wiping operation. To initiate low speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper low speed control circuit of the M75 Windshield Wiper Motor.

Intermittent Wiper Operation
With the S82 Windshield Wiper/Washer Switch in the intermittent position, the discrete signal circuit to the K9 Body Control Module is pulled down through a number of resistors within a resistor ladder to a low reference provided by the K9 Body Control Module. The number of resistors the signal travels through is dependent on the intermittent selection made on the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module interprets this range of voltage pull-down as a request for intermittent wiper activation, with each pull-down voltage value equating an intermittent delay (sensitivity) level. If the rain sense is enabled the K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes windshield optics to determine the amount of water on the windshield and will communicate this info to the K9 Body Control Module, which will vary wiping cadence based on the intermittent sensitivity selection on the S82 Windshield Wiper/Washer Switch and the amount of water on the windshield. If the rain sense is disabled the K9 Body Control will vary the wiping cadence based on a preset amount of time determined by the intermittent delay selection on the S82 Windshield Wiper/Washer Switch. To initiate wiper operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the low speed control circuit of the M75 Windshield Wiper Motor.

High Speed Wiper Operation
With the S82 Windshield Wiper/Washer Switch in the high speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. In addition to this pull-down signal, a second switch in the S82 Windshield Wiper/Washer Switch is also pulled down to low reference. This signal is a discrete input to the K219 Lighting Control Module. The K219 Lighting Control Module requests wiping operation. To initiate high speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay and grounds the KR12C Windshield Wiper Speed Control Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the switched contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper motor high speed control circuit of the M75 Windshield Wiper Motor.

Mist (Single Wipe) Operation
The mist (single wipe) position is a momentary switch position that will return the S82 Windshield Wiper/Washer Switch to the off position as soon as the switch is released. With the S82 Windshield Wiper/Washer Switch in the mist (single wipe) position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting consistent low speed wiping operation as long as the S82 Windshield Wiper/Washer Switch is held in the mist (single wipe) position. If the mist (single wipe) position

is only briefly selected, the K9 Body Control Module will request only a single wipe.

Wiper Park Operation
With the S82 Windshield Wiper/Washer Switch in the off position, the discrete signal circuit to the K9 Body Control Module is pulled down through one resistor in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request to stop wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting wiper operation stop. At this time, the K219 Lighting Control Module will deactivate the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper relays. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the K219 Lighting Control Module will continue to operate the motor until the wipers reach the park position. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The K219 Lighting Control Module will park the wipers next time the ignition is turned ON.

The windshield wiper system consists of the following electrical components:

- S82 Windshield Wiper/Washer Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR12C Windshield Wiper Speed Control Relay
- B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
- M75 Windshield Wiper Motor

Windshield Wiper Components

S82 Windshield Wiper/Washer Switch

The S82 Windshield Wiper/Washer Switch is the primary input to the K9 Body Control Module for the driver to control windshield wiper operation. The S82 Windshield Wiper/Washer Switch also provides discrete input to the K219 Lighting Control Module during high speed wiper operation.

The S82 Windshield Wiper/Washer Switch contains three individual internal switch. One switch changes between mist (single wipe), off, intermittent, low speed, and high speed selection. The second switch changes with differing intermittent sensitivity selection. The third switch is only active when high speed wiper operation is selected. A resistor ladder is also used to determine switch selection and intermittent sensitivity selection. The high speed switch does not utilize the resistor ladder.

The K9 Body Control Module provides the S82 Windshield Wiper/Washer Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. This voltage drop will vary depending on the number of resistors in the resistor ladder, which changes depending on switch position. In the off position, current flows through a single resistor. In the mist (single wipe), low speed, and high speed position, current flows through two resistors. In the intermittent position, current flows through three or more resistors, depending on the intermittent sensitivity selected.

The S82 Windshield Wiper/Washer Switch provides a discrete switch input to the K219 Lighting Control Module during high speed wiper operation. Voltage is applied by the K219 Lighting Control Module to this signal circuit and voltage drop is monitored to determine switch selection. When high speed operation is selected, the signal circuit is pulled to ground (low reference).

K9 Body Control Module

The K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to request wiper operation. The K9 Body Control Module responds to input requests from the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module provides a constant ground for the S82 Windshield Wiper/Washer Switch and monitors a signal circuit to determine the requested windshield wiper position.

The K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. Messages are received from the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to indicate the amount of water on the windshield.

K219 Lighting Control Module

The K219 Lighting Control Module controls the wiper motor via two PCB relays (KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay). The K219 Lighting Control Module receives a message from K9 Body Control Module over CAN to determine what type of wiper operation is requested.

KR12B Windshield Wiper Relay

The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

KR12C Windshield Wiper Speed Control Relay
The KR12C Windshield Wiper Speed Control Relay controls B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a ground controlled by the K219 Lighting Control Module. The switch side of the relay receives B+ through the KR12B Windshield Wiper Relay. When high speed wiper operation is requested, the K219 Lighting Control Module will provide ground to the coil side of the relay. This will energize the relay, closing the high current contact, and supply the B+ to the M75 Windshield Wiper Motor high speed control, enabling high speed wiper operation.

B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
Note: Due to the sensitivity of the sensor, the wipers may swipe once upon start up or rapid lighting changes.

The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes an internal infrared LED and an optic sensor to determine the amount of water on the windshield. The infrared LED bounces infrared light against the inside of the windshield. The optic sensor measures the amount of light returned after bouncing off the windshield. With a dry windshield, all light bounced off the windshield is returned to the optic sensor. As water accumulates on the windshield, the light input to the optic sensor is diffused and reduced. The amount of light reduction corresponds directly to the amount of water on the windshield. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor interprets the amount of light returned and communicates this info to the K9 Body Control Module, which will control intermittent wiper operation based on the sensitivity selection of the S82 Windshield Wiper/Washer Switch and the amount of water on the windshield.

M75 Windshield Wiper Motor
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

Windshield Washer Operation

The windshield washer system allows the driver to clean the vehicle’s windshield using a discrete switch. The washer system uses the S82 Windshield Wiper/Washer Switch as the primary means of driver control. The S82 Windshield Wiper/Washer Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN to control G24 Windshield Washer Pump activation. The K9 Body Control Module also communicates with the K219 Lighting Control Module to control B+ to the M75 Windshield Wiper Motor during operation.

The windshield wiper system consists of the following electrical components:

- S82 Windshield Wiper/Washer Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR11 Windshield Washer Pump Relay
- G24 Windshield Washer Pump
- M75 Windshield Wiper Motor
- B118B Windshield Washer Fluid Level Switch

Windshield Washer Components

S82 Windshield Wiper/Washer Switch
The S82 Windshield Wiper/Washer Switch is the primary input to the K9 Body Control Module for the driver to control windshield washer operation.

The K9 Body Control Module provides the S82 Windshield Wiper/Washer Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. The S82 Windshield Wiper/Washer Switch contains an internal switch dedicated to windshield washer operation. When the switch is closed, the signal circuit is pulled to ground, indicating washer operation is requested.

K9 Body Control Module
The K9 Body Control Module responds to input requests from the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module provides a constant ground for the S82 Windshield Wiper/Washer Switch and monitors a signal circuit to determine the requested windshield wiper position.

When washer operation is requested, the K9 Body Control Module will send a CAN message to the K219

Lighting Control Module to enable the G24 Windshield Washer Pump, as well as supply B+ to the M75 Windshield Wiper Motor for low speed wiper operation.

K219 Lighting Control Module
The K219 Lighting Control Module controls B+ to the G24 Windshield Washer Pump. When washer operation is requested from a CAN message from the K9 Body Control Module, the K219 Lighting Control Module will apply voltage via a high side driver to the KR11 Windshield Washer Pump Relay. The K219 Lighting Control Module also controls B+ to the M75 Windshield Wiper Motor. When washer operation is requested, the K219 Lighting Control Module will apply voltage via a high side driver to the KR12B Windshield Wiper Relay.

The K219 Lighting Control Module also monitors the B118B Windshield Washer Fluid Level Switch through a discrete signal circuit.

KR12B Windshield Wiper Relay
The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

KR11 Windshield Washer Pump Relay
The KR11 Windshield Washer Pump Relay supplies B+ to the G24 Windshield Washer Pump and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the G24 Windshield Washer Pump, enabling washer pump operation.

G24 Windshield Washer Pump
The G24 Windshield Washer Pump receives a constant chassis ground. B+ is controlled by the KR11 Windshield Washer Pump Relay. With voltage applied, a DC motor spins, connecting and pressurizing washer fluid from the washer fluid reservoir. The pressurized washer fluid is deposited on the windshield through a series of lines and nozzles.

M75 Windshield Wiper Motor
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module. The M75 Windshield Wiper Motor will wiper at low speed when washer operation is requested.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

B118B Windshield Washer Fluid Level Switch
The B118B Windshield Washer Fluid Level Switch receives a constant chassis ground. A signal circuit is monitored by the K219 Lighting Control Module. The K219 Lighting Control Module applies voltage to the signal circuit. When the B118B Windshield Washer Fluid Level Switch is closed, voltage on the signal circuit is pulled to ground, indicating fluid in the washer fluid reservoir.

Section 2

Brakes

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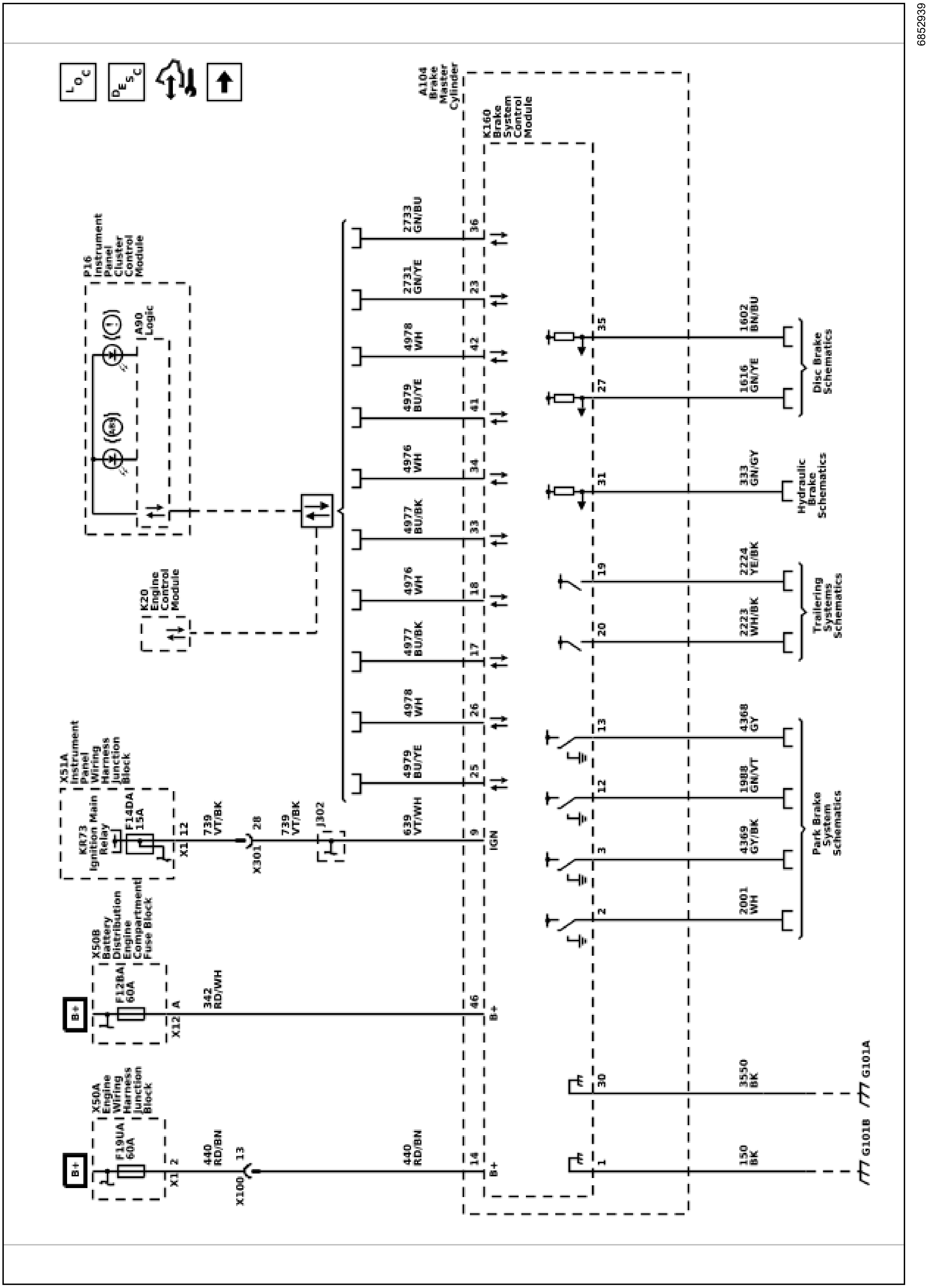
Brakes

Antilock Brake System

Schematic and Routing Diagrams

Antilock Brake System Schematics (Module Power, Ground, Serial Data, Indicators, and Subsystem References)


6852939
A104 Brake Master Cylinder
K160 Brake System Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
K20 Engine Control Module
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F14DA 15A
X1 12
739 VT/BK
X301 28
739 VT/BK
J302
639 VT/WH
9 IGN
X50B Battery Distribution Engine Compartment Fuse Block
B+
F128A 60A
X12 A
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X50A Engine Wiring Harness Junction Block
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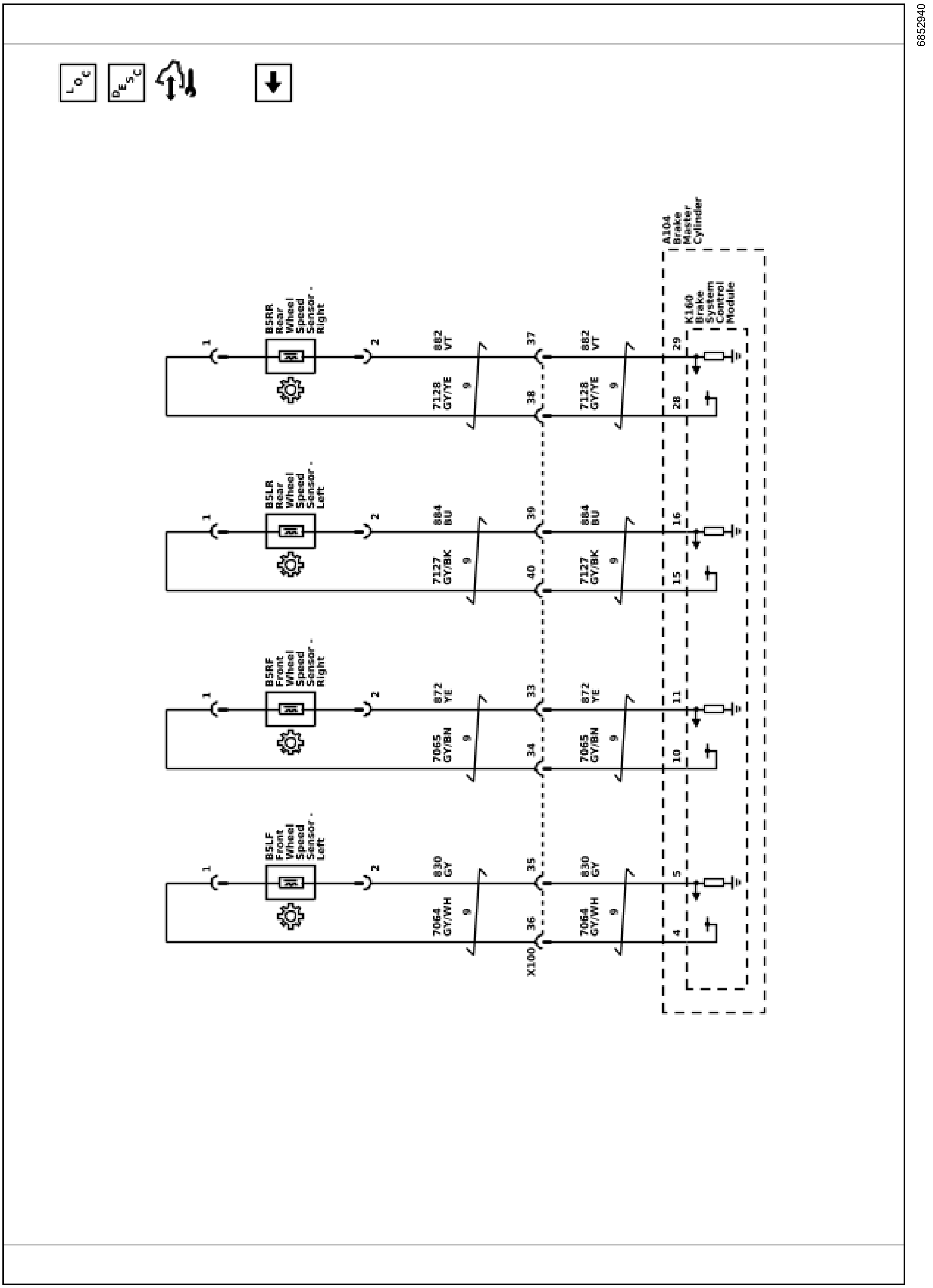
2731 GN/YE 23
2733 GN/BU 36
35 1602 BN/BU
27 1616 GN/YE
Disc Brake Schematics
31 333 GN/GY
Hydraulic Brake Schematics
19 2224 YE/BK
20 2223 WH/BK
Trailering Systems Schematics
13 4368 GY
12 1988 GN/VT
3 4369 GY/BK
2 2001 WH
Park Brake System Schematics
30 3550 BK G101A
1 150 BK G101B

Antilock Brake System Schematics (Wheel Speed Signals)


6852940
LOC
DESC
B5LF Front Wheel Speed Sensor - Left
B5RF Front Wheel Speed Sensor - Right
B5LR Rear Wheel Speed Sensor - Left
B5RR Rear Wheel Speed Sensor - Right
1
2
830 GY
7064 GY/WH
872 YE
7065 GY/BN
884 BU
7127 GY/BK
882 VT
7128 GY/YE
9
35
36
33
34
39
40
37
38
X100
A104 Brake Master Cylinder
K160 Brake System Control Module
5
4
11
10
16
15
29
28

Description and Operation

ABS Description and Operation

Description and Operation

This vehicle is equipped with a Integrated Brake Control (IBC), also known as Brake System Control Module.

The Integrated Brake Control is an electromechanical device that interprets and converts driver input and provides a corresponding hydraulic pressure output to activate a standard brake system according to the drivers demand. The electro-hydraulic boost system replaces the conventional vacuum-based power assist brake system, which provides an advantage in efficiency. The electro-hydraulic brake system supplies "on-demand" power when the driver presses the brake pedal. In an event of no electrical energy or failure condition the drivers input is mechanically converted to a hydraulic pressure output.

Depending on options, the following vehicle performance enhancement systems are provided.

- ABS
- Traction Control
- Stability Control
- Brake Pad Life Monitoring
- Dynamic Rear Proportioning
- Panic Brake Assist
- Teen Mode Support
- Trailer Sway Control
- Engine Drag Control
- Brake Drying/Cleaning
- Extended Hill Hold Start Assist
- Hill Descent Control
- Collision Imminent Braking
- Full Speed Range Adaptive Cruise Control Braking
- Trailer Brake Control
- Park Brake Control Motor on Caliper/Drum (with Push/Push)
- Unidirectional WSS
- CAN messages:
  - Chassis System Total Brake Axle Torque
  - DIC message during ABS (no pedal feedback)
  - Switch based ESC disable
  - Switch based Traction disable
  - ESC enable
  - OBDII - Rough Road Wheel Speed Usage

- The Body control module (BCM) monitors the brake pedal position sensor signal when the brake pedal is applied and sends a high speed serial data message to the Brake System Control Module indicating the brake pedal position.
- Instrument cluster - The instrument cluster displays the vehicle speed based on the information from the engine control module. The engine control module sends the vehicle speed information via a high speed serial data to the body control module. The body control module then sends the vehicle speed information via serial data to the instrument cluster in order to display the vehicle speed, either in kilometers or miles, based on the vehicle requirements.
- Multi-axis acceleration sensor - The yaw rate, lateral acceleration and longitudinal acceleration sensors are combined into one multi-axis acceleration sensor, internal to the inflatable restraint sensing and diagnostic module. The Brake System Control Module receives serial data message inputs from the yaw rate, lateral acceleration and longitudinal acceleration sensor and activates stability control and hill hold start assist function depending on multi-axis acceleration sensor input.
- Multifunction switch - The traction control switch is a multifunction momentary switch. The body control module monitors the signal circuit from the traction control switch and sends a high speed serial data message to the Brake System Control Module indicating the switch position. The traction control and stability control are manually disabled or enabled by pressing the traction control switch.
- Steering wheel angle sensor - The Brake System Control Module receives serial data message inputs from the steering angle sensor. The steering wheel angle sensor signal is used to calculate the intended driving direction. The steering wheel angle sensor is installed as an internal part of the power steering gear.
- Transmission control module - The Brake System Control Module receives high speed serial data message inputs from the transmission control module indicating the gear position of the transmission for hill start assist or hill hold functions.
- Wheel speed sensors – This vehicle is equipped with unique directional wheel speed sensors that can detect wheel direction as well as zero wheel speed. The wheel speed sensors are Active sensors that receive a 12 V power supply voltage from the Brake System Control Module and provide an output signal to the module. As the wheel spins, the wheel speed sensor sends the Brake System Control Module a DC square wave signal. The Brake System Control Module uses the

frequency of the square wave signal to calculate the wheel speed.

Power-Up-Self Test

The Brake System Control Module is able to detect many malfunctions whenever the ignition is ON. However, certain failures cannot be detected unless active diagnostic tests are performed on the components. Shorted solenoid coil or motor windings, for example, cannot be detected until the components are commanded ON by the Brake System Control Module. Therefore, a power-up self-test is performed to verify correct operation of system components. The Brake System Control Module performs the first phase of the power-up self-test when the ignition is first turned ON. This phase consists of internal self-testing of the Brake System Control Module along with electrical checks of system sensors and circuits.

Antilock Brake System (ABS) Features

The active control/modulation of brake fluid hydraulic modulates pressure to the front and/or rear brake corner subsystems (brake torque control) to preclude wheel lock-up and enhance tire-to-road longitudinal braking traction. Wheel lock-up (sliding wheel, not rolling wheel) occurs when the wheel brake torque exceeds the available tire-to-road traction. Avoidance of wheel lock-up provides the driver with the ability to maintain vehicle stability and steer-ability. Improved tire-to-road longitudinal braking traction minimizes vehicle stopping distance.

Brake Assist Features

The Brake Assist provides additional brake pressure over the pressure provided by the conventional brake apply system.

Panic Brake Assist

This feature will apply brakes more quickly when a panic brake situation is determined. Panic Brake Assist detects that the driver intent is to stop the vehicle as quickly as possible, but does not apply sufficient brake pressure to do so. The feature will detect the driver intent then actively apply brake pressure to maximum pressure, thus activating the ABS system and stopping the vehicle as quickly as possible.

Hydraulic Fade Compensation

Based on a brake disc/pad temperature estimate, driver applied master cylinder pressure and vehicle deceleration rate, Hydraulic Fade Compensation will increase brake system pressure above driver applied brake pressure when the brake system determines a gross fade condition.

The goal of providing additional brake system pressure is to reduce stopping distance during high deceleration requests from the driver. The driver will experience fading brakes while using low or medium brake pedal force application. The Hydraulic Fade Compensation will only activate during high brake pedal force application.

Rear Brake Boost

The Rear Brake Boost function provides rear hydraulic brake assist to ensure that all four corners are achieving maximum braking during ABS. When vehicle loading is heavily rear axle biased the rear brakes may not utilize all of the available road adhesion. The hydraulic Rear Brake Boost feature is designed to provide additional pressure to the rear brakes when the front brakes ABS are activated and the rear wheels have low slip.

Electronic Brake Pre-Fill

This feature is used to reduce the brake response time when the driver quickly releases the accelerator pedal. This will also be used to support the use of low drag calipers.

Motor on Caliper Torque Overlay

This feature is used to reduce the driver's braking effort when in backup (no power) mode. Torque is applied with the Electric Park Brake motors on the front or rear calipers, preferably isolating that hydraulic circuit, to provide assist. When in this mode, the Electric Park Brake motors are controlled to apply torque in accordance with the driver's commanded deceleration, instead of clamping to a certain force.

Electronic Stability Control (ESC) Features

Roll Over Mitigation / Preemptive ESC

Using the standard ESC sensor set, Roll Over Mitigation will detect driving situations that could cause a vehicle rollover. After detection, ESC brake control will be modified to reduce the chance of vehicle rollover.

Trailer Sway Control

Trailer Sway Control uses the ESC system to detect trailer instability and apply differential braking to dampen out trailer oscillation and instability. Trailer Sway Control will detect the vehicle dynamic characteristics associated with trailer sway and actuate the vehicle’s brakes and reduce engine torque, if required, to dampen or eliminate trailer oscillations. Trailer Sway Control shall recognize repeated trailer instability and communicate to the display device to warn a driver of unsafe trailer setup.

Torque Vectoring by Brakes

Torque Vectoring by Brakes enhances vehicle agility by using active brake applies and engine torque requests to maximize traction on drive wheels. While cornering, brakes are applied to the inside drive wheels, thus allowing more torque to the outside wheels without slipping the inside wheels. Increasing the engine torque, above driver request, gives more torque to outer wheels. Torque Vectoring by Brakes is designed for all around performance, while this feature is solely designed for high cornering maneuvers.

Flat Tire ESC Enable
If flat tire is detected, ESC system shall not be allowed to be disabled by the driver (ESC shall be re-enabled if driver has already disabled). The traction control system will be allowed to be disabled by the driver.

ESC Control With Vehicle Weight Estimation
Brake System Control Module shall have the capability to estimate vehicle weight while the vehicle is being driven. This feature shall modify ESC control based on estimated vehicle weight when a compact spare tire is detected on the rear axle.

Traction Control System (TCS) Features

Vehicle Stuck Control
The traction control system shall recognize a vehicle “stuck” condition by monitoring excessive wheel slip for greater than 5 seconds with a vehicle reference velocity of less than 3 kph. Once detected, TCS will allow additional wheel slip of 5% to “dig” the vehicle out. This feature does not guarantee the vehicle to get unstuck, only to assist the driver.

Power Hop Control
Power hop is defined as an oscillation of the driven wheels due to acceleration on high coefficient surfaces. This wheel oscillation causes the vehicle to bounce resulting in driver discomfort, failure of driveline components and potentially other damage to the vehicle. This feature will be detected using Wheel speed sensor signal when TCS is “ ON”. In case TCS is “ OFF”, Brake System Control Module and ECM will be required to mitigate power hop. If the vehicle is exhibiting this signature, the traction control system will attenuate power hop by reducing engine torque and applying brake pressure.

Engine Drag Control
This feature is designed to mitigate drop-throttle-oversteer/understeer.

On a rear-wheel-drive vehicle during maximum cornering while applying throttle, the vehicle could exhibit oversteer when the driver quickly releases the throttle. This feature will slowly reduce the engine torque in order to maintain vehicle stability.

The Enabling Conditions include: Engine is required to be running, Clutch is released for Manual Trans , Vehicle speed is above 18kph (12mph) and the Powertrain is engaged through fault message from ECM/TCM/PCM

Enhanced Off Road Control (Rock Crawling)
This feature is intended to maximize rock crawling capability while in Offroad mode or 4 Low transfer case mode**.** This feature shall be enabled when in Offroad mode (if available) or when transfer case is in 4 Low. The traction control calibration shall be biased towards low speed, active capability through the use of more brake control with less wheel slip.

Brake System Control Module Features

Brake Drying/Cleaning

Brake Drying/Cleaning autonomously applies a small amount of brake pressure during long driving on wet roads in order to remove water from the rotor surface. The brake application is unperceivable to the driver, but should result in improved brake feel and performance. Conditions to enable Brake Drying/Cleaning.

- Wipers need to be ON
- If Cruise is Active, Brake Drying/Cleaning will not function as minimum pedal position is required
- If driver brakes, the distance counter will be reset
- Brake pressure needs to build up to 3 bar at all 4 wheels

Hill Start Assist

Hill Start Assist is a feature that will temporarily hold the vehicle while on a grade. This feature will hold the vehicle 2-5 seconds after the driver has removed their foot from brake pedal and the vehicle is on a grade exceeding 7%. The design is to prevent the vehicle from rolling down the hill before the driver has an opportunity to apply accelerator pedal. The brakes will automatically release when the accelerator pedal is applied. It will not activate if the vehicle is in a drive gear and facing downhill, or if the vehicle is facing uphill and in Reverse.

Driveline Damping

Driveline Damping is required on vehicles with ESC, Stop/Start functionality and an automatic transmission. This feature holds brake pressure to dampen driveline acceleration disturbance as engine is restarted and holds brake pressure to retard or prevent the vehicle from rolling. It is used for driver comfort and has also been used to extend vehicle hold on a steep grade.

Extended Hold Hill Start Assist
Extended Hold Hill Start Assist will function the same as Hill Start Assist except there will be an indefinite vehicle hold instead of a temporary vehicle hold. The vehicle will be held by the Brake System Control Module for up to five minutes, and then will transfer the hold to Electronic Park Brake when necessary. This

feature is required for all Stop/Start variants to prevent vehicle rollback when the engine shuts off. All of the driver exit strategies of Hill Start Assist with Electronic Park Brake will also apply to this feature.

Hill Descent Control
Hill Descent Control provides autonomous braking when the vehicle is descending a very steep incline in either forward or reverse transmission gear. The grade activation minimum threshold is 10%. Typical vehicle speeds while using this feature are 5-30kph (6–19mph). This feature can provide convenience and comfort for steep offroad driving.

Hill Descent Control is enabled by the driver activating the Hill Descent Control switch at a vehicle speed below the maximum enabling vehicle speed.

Hill Descent Control is disabled if vehicle speed exceeds 60 km/h for 30 seconds or immediately if vehicle speed exceeds 80km/h. Cruise control will not be allowed to activate when Hill Descent Control is enabled by the driver.

Automatic Vehicle Hold
Automatic Vehicle Hold is a driver enabled feature that holds the vehicle at a standstill for an indefinite amount of time. This feature is similar to the Extended Hold Hill Start Assist except it will function on all road grades. It must be enabled by the driver and will revert to a disabled state upon key-up. The brake System Control Module will hold vehicle, then transfer hold to Electric Park Brake (EPB) when necessary.

The Automatic Vehicle function requires the vehicle to have an electronic parking brake which will allow the brake pressure hold time to increase up to 5 minutes before engaging the electronic park brake. Automatic Vehicle is available on vehicles with automatic transmissions and only available on vehicles with manual transmissions if equipped with a neutral gear position indicator (start/stop engines have neutral gear position indicator).

Vehicle Moding
The Brake System Control Module shall use ‘Driver Selected Mode Status signals to determine what mode the vehicle is in. The Brake System Control Module shall use the supported Driving modes to indicate to the customer what mode they are in. Mode 0 that is correspond to “ Tour or Normal” mode shall always be supported and will be considered the default. Other supported modes are: Sport, Offroad, Track, Snow/Ice and Tow Haul.

Electric Park Brake Features

Park Rollaway EPB Apply

This feature applies the EPB autonomously when vehicle motion is detected while in Park. The most likely scenario for activation of this feature is a vehicle on a split-mu grade and an open differential. The low mu wheel can spin in the opposite direction from the vehicle motion, and so the high mu wheel may allow the vehicle to roll. Applying the EPB to both rear wheels prevents vehicle motion by preventing the high mu wheels from rotating.

Steep Grade Apply:

This feature autonomously applies the EPB when the vehicle is on a steep grade. The Steep Grade apply can be enabled if Park Rollaway Detection apply is enabled. It can also be enabled on its own.

Interface with Other Features

The features set below are systems that will be controlled (to various degrees) by the Brake System Control Module by sending out performance requests to each system which should be arbitrated in the sub-system for execution. The idea is that the Brake System Control Module request should override normal sub-system control and these requests should not override diagnostic, failure, or other special or overriding control.

Steering Torque Overlay (for both ABS and TCS)

This feature provides haptic feedback by increasing or decreasing steering assist to encourage appropriate course correction. This feature functions in combination with ESC or ABS

4WD Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating.

4WD w/4Low Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating

Trailer Braking Control Interface

The Brake System Control Module shall be able to independently use the trailer brake activation request to stabilize and decelerate the vehicle**.** The Brake System Control Module can use Trailer Braking Force Output and Trailer Braking Gain Setting as feedback to know how much braking the Integrated Trailer Brake Control is currently doing

Dynamic Braking with EPB

Dynamic Braking with EPB provides autonomous braking when the EPB switch is pressed when the vehicle is in motion. With the use of this feature, if the EPB switch is pressed while the vehicle is moving, the Brake System Control Module will apply braking at all 4 corners until the vehicle is stopped, then the EPB will apply and Brake System Control Module will release pressure.

Electronic Transmission Range Select (ETRS) Autonomous Apply

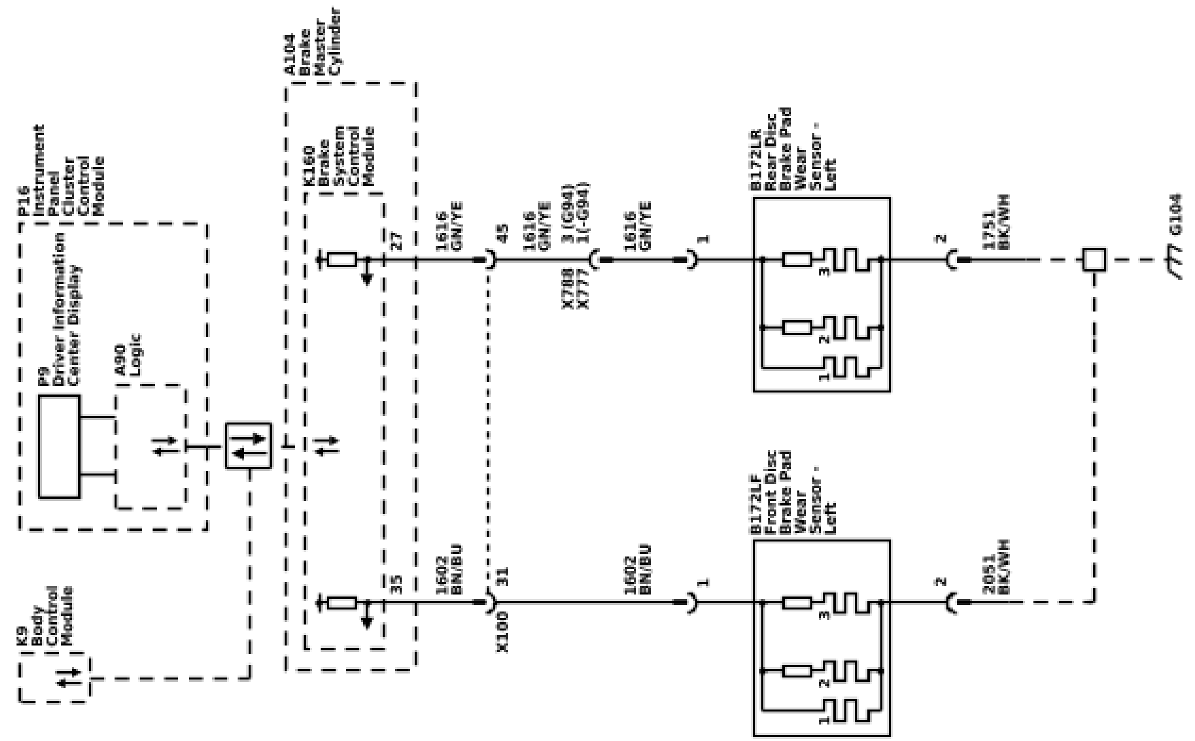
This feature applies brake pressure on a request from ETRS. This is done temporarily until the EPB can apply, using the ETRS EPB Apply feature.

The Brake Control System shall provide a short service brake hold to prevent the vehicle from rolling between when the ETRS commands a hold and the electronic park brake is applied. The primary purpose of the ETRS/Brakes interface is to apply the park brake when ETRS has a failure that prevents the transmission from achieving park; or if the driver shifts to park on a grade, EPB will reduce the load on the park pawl by applying (ETRS calculates and calibrates this grade).

Disc Brakes

Schematic and Routing Diagrams

Disc Brake Schematics (Brake Pad Wear Sensors)


P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K9 Body Control Module
A104 Brake Master Cylinder
K160 Brake System Control Module
27
35
1616 GN/YE
45
1616 GN/YE
3 (G94)
1(-G94)
X788
X777
1616 GN/YE
1
B172LR Rear Disc Brake Pad Wear Sensor - Left
3
2
1
2
1751 BK/WH
G104
1602 BN/BU
31
X100
1602 BN/BU
1
B172LF Front Disc Brake Pad Wear Sensor - Left
3
2
1
2
2051 BK/WH

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Description and Operation

Brake Pad Life Monitoring Description and Operation

This vehicle has a system that estimates the remaining life of the front and rear brake pads. When the feature is active, brake pad life is displayed in the Driver Information Center (DIC) as a percentage.

When the system has determined that the brake pads need to be replaced, a message will display, which may include mileage remaining.

Customers can use this information to plan their vehicle maintenance. A prognostic indicator of life remaining, especially in distance remaining, enables customers to arrange brake pad replacement at a convenient time.

The system will display a percent pad life on the DIC at all time just like oil life monitoring. When you approach end of pad life, the messaging will change to a distance parameter (i.e. 2000 miles remaining, etc.) and it will start to actively remind the driver to take action at ignition cycle intervals.

If the feature has malfunctioned, fault messaging will be provided. The customer will be able to disable the feature display if desired, and the display will confirm this.

The Brake System Control Module has one signal input for a front axle brake pad wear sensor and one signal input for a rear axle brake pad wear sensor. The brake system control module supply voltage to the brake pad wear sensor and the sensor is grounded to the vehicle ground. The brake system control module diagnose any issues with the power supply for the sensors and set “ invalid” if there is a failure detected in the supply voltage system.

When the brake pads are new, the scan tool parameter Brake Pad Wear Sensors will be near 0 volts. The brake pad wear sensor consists of breakable wire resistors. As the brake pad sensor wears, it causes the breakable sensor wire resistors to wear away, causing the scan tool parameter Brake Pad Wear Sensors voltage to increase. The brake system algorithm along with the remaining wear sensors will determine the amount of wear and display this as a percentage of brake pad life remaining and is displayed on the DIC.

After replacing the brake pads, the Axle Brake Pad Life Monitor Reset Learn must be performed.

The brake pad life system can be turned off. This may be necessary if aftermarket brake pads without wear sensors are installed. When the system is turned off, the front and rear brake pad life percentages will not display.

Disc Brake System Description and Operation

System Component Description

The disc brake system consists of the following components:

Disc Brake Pads: Applies mechanical output force from the hydraulic brake calipers to friction surfaces of brake rotors.

Disc Brake Rotors: Uses mechanical output force applied to friction surfaces from the disc brake pads to slow speed of tire and wheel assembly rotation.

Disc Brake Pad Hardware: Secures disc brake pads firmly in proper relationship to the hydraulic brake calipers. Enables a sliding motion of brake pads when mechanical output force is applied.

Disc Brake Caliper Hardware (Floating Caliper): Provides mounting for hydraulic brake caliper and secures the caliper firmly in proper relationship to caliper bracket. Enables a sliding motion of the brake caliper to the brake pads when mechanical output force is applied.

System Operation (Floating Caliper)

Mechanical output force is applied from the hydraulic brake caliper pistons to the inner brake pads. As the pistons press the inner brake pads outward, the caliper housings draw the outer brake pads inward. This allows the output force to be equally distributed. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of both the brake pad and brake caliper hardware is essential for even distribution of braking force.

System Operation (Fixed Caliper)

Mechanical output force is applied from the hydraulic brake caliper inboard and outboard pistons to the inner and outer brake pads. The brake calipers are a fixed, opposed-piston design, allowing the output force to be equally distributed through the distribution of the pressurized brake fluid within the caliper. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of the brake pad hardware and of the brake caliper inboard and outboard pistons is essential for even distribution of braking force.

System Characteristics

Brake Noise

Brake noise can occur and to a degree, some brake noise is normal. Variations in driving conditions such as the weather, environment, driving patterns, differences in vehicle loading, and type or style of driving, can affect brake wear. Any one of these variations can cause brake noise to become apparent. Inspect and verify that all metal-to-metal contact areas of the brake pads, brake pad guides or springs, brake caliper housing, caliper bracket and/or suspension knuckle, as applicable, are clean and free of corrosion and scale.

Brake noise is a “slip-stick” vibration of disc brake components and, if it occurs intermittently, can be considered normal. Most brake noise may be eliminated or temporarily reduced by performing 3 or 4 aggressive brake applications. If the brake noise persists or consistently recurs, application of a damping compound to the brake pad mounting plate where it contacts the caliper can lessen the vibration as the components move relative to each other. Refer to Adhesives, Fluids, Lubricants, and Sealers in this section for recommended compounds.

The following brake noises are characteristic of all brake systems. These noises cannot be avoided, and may not indicate improper operation of the brake system.

Squeak/Squeal Noise

A squeak or squeal noise can occur on vehicles with front semi-mettalic brake pads during light to medium brake pedal application at low to moderate vehicle speeds. Occasionally this noise may appear from the front or rear brakes after a period of non-use such as overnight, or cold brakes and/or in high humidity conditions.

Grinding Noise

Common occurrence for rear brakes and some front disc brakes during initial brake applications after the vehicle has been parked overnight. Caused by light corrosion forming on the metal brake component friction surfaces during vehicle non-use. Typically disappears after the first few brake applications.

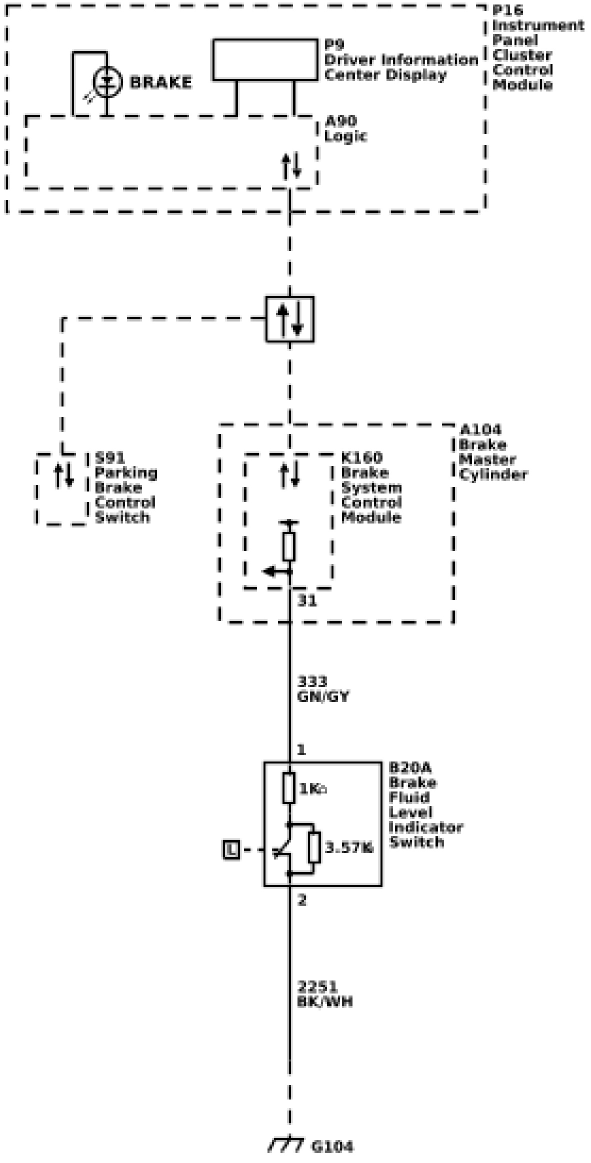
Groan Noise

A groan type noise may be heard during a quick stop, or when slowly moving forward from a complete stop. On vehicles equipped with antilock brake systems (ABS), a groan or moan noise may occur during heavy brake application or on road surfaces with compromised traction such as loose gravel, or on wet or icy roads. This is a normal function of ABS activation.

Hydraulic Brakes

Schematic and Routing Diagrams

Hydraulic Brake Schematics (Hydraulic Brakes)


P16
Instrument
Panel
Cluster
Control
Module
P9
Driver Information
Center Display
BRAKE
A90
Logic
S91
Parking
Brake
Control
Switch
A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
31
333
GN/GY
1
B20A
Brake
Fluid
Level
Indicator
Switch
1KΩ
3.57KΩ
L
2
2251
BK/WH
G104

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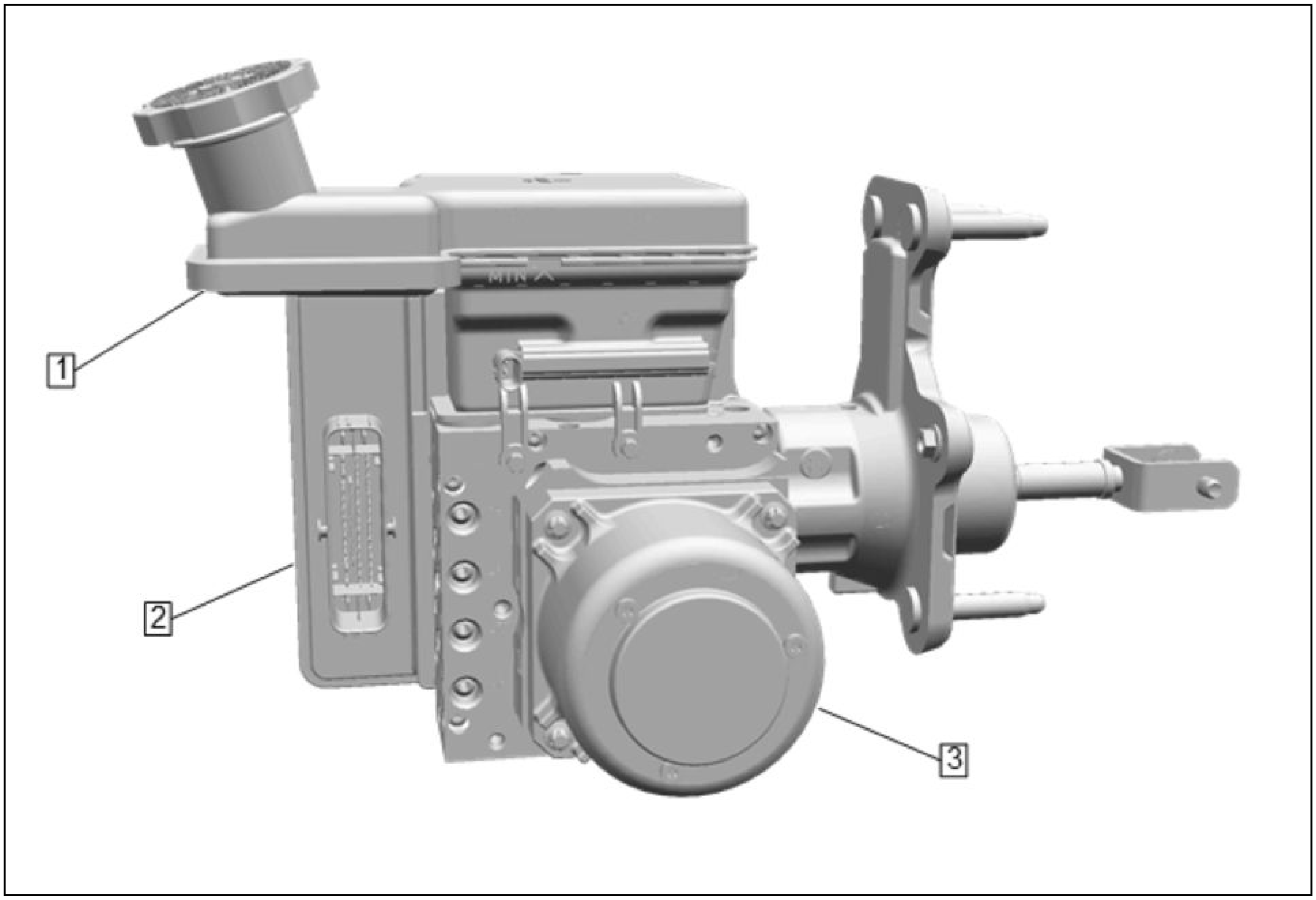
Description and Operation

Brake Assist System Description and Operation

System Component Description



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Note: The above graphic may not be an exact representation for every vehicle configuration.

The brake assist system is an electro - hydraulic brake booster that replaces a vacuum booster including its vacuum supply. The brake booster unit takes the driver applied brake demand and transforms this into an amplified brake pressure and does not rely on vacuum to function. The brake booster unit is designed to operate together with an electronic stability control module which is normally responsible for ABS, traction control and stability control.

The master cylinder and power brake booster unit consists of a brake master cylinder reservoir (1), an electronic brake booster control module (2), pedal coupling unit/pushrod, and the brake master cylinder (3) with integrated brake pressure modulator valve.

System Operation

Brake system input force is multiplied by the brake pedal and transferred by the pedal pushrod to the hydraulic brake master cylinder. Effort required to apply the brake system is reduced by the electronic brake booster.

Shutdown Test

The brake master cylinder performs a self-test 2 minutes after ignition off. The self-test consists of an internal hydraulic test of the brake master cylinder and an external hydraulic compliance test and hydraulic leak test of the brake lines and calipers. The brake master cylinder will take the appropriate actions based on the test results at the next startup. The self-test will not run again until the vehicle has been driven 0.804 Km (0.5 mile), 40.23 kph (25 mph) minimum.

Brake Assist System Description and Operation

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Full Brake Assist	• - Normal hydraulic brake assist. • - Brake pedal travel and force (pressure) measured. • - Pedal feel indicates the relation of the pedal travel to the pedal force. • - Brake system applies brake pressure to the wheels to achieve deceleration that makes driver effort comfortable.	• - Pedal feel: Normal (force to travel of brake pedal). • - Brake pedal effort to decel: Normal. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	None	None
Full Brake Assist with warning	• - Normal hydraulic brake assist. • - Driver warned with DIC message only of detected failure. • - There may be a small brake assist or pedal feel degradation depending on if/where the air is in the system or what component is overheated.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Normal. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Service Brake Assist	None

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Reduced Brake Assist	• - Normal hydraulic brake assist available • - Driver warned with DIC message but due to nature of failure, engineering determined more warning needed. • - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming). • - Full braking available as pedal is depressed further.	• - Pedal feel: Normal • - Brake Pedal effort to decel: More effort required for low decel values (noticeable). Full braking capability for increased effort. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Service Brake Assist	None
Reduced Brake Assist	• - Normal hydraulic brake assist on 2 wheels. • - Performed when brake system detects and isolates a leak in one of the two brake circuits.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed Low Brake Fluid (Potentially)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
Two Wheel Brake Assist	• - Normal hydraulic brake assist on 2 wheels. • - Performed when brake system detects and isolates a leak in one of the two brake circuits.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed Low Brake Fluid (Potentially)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM

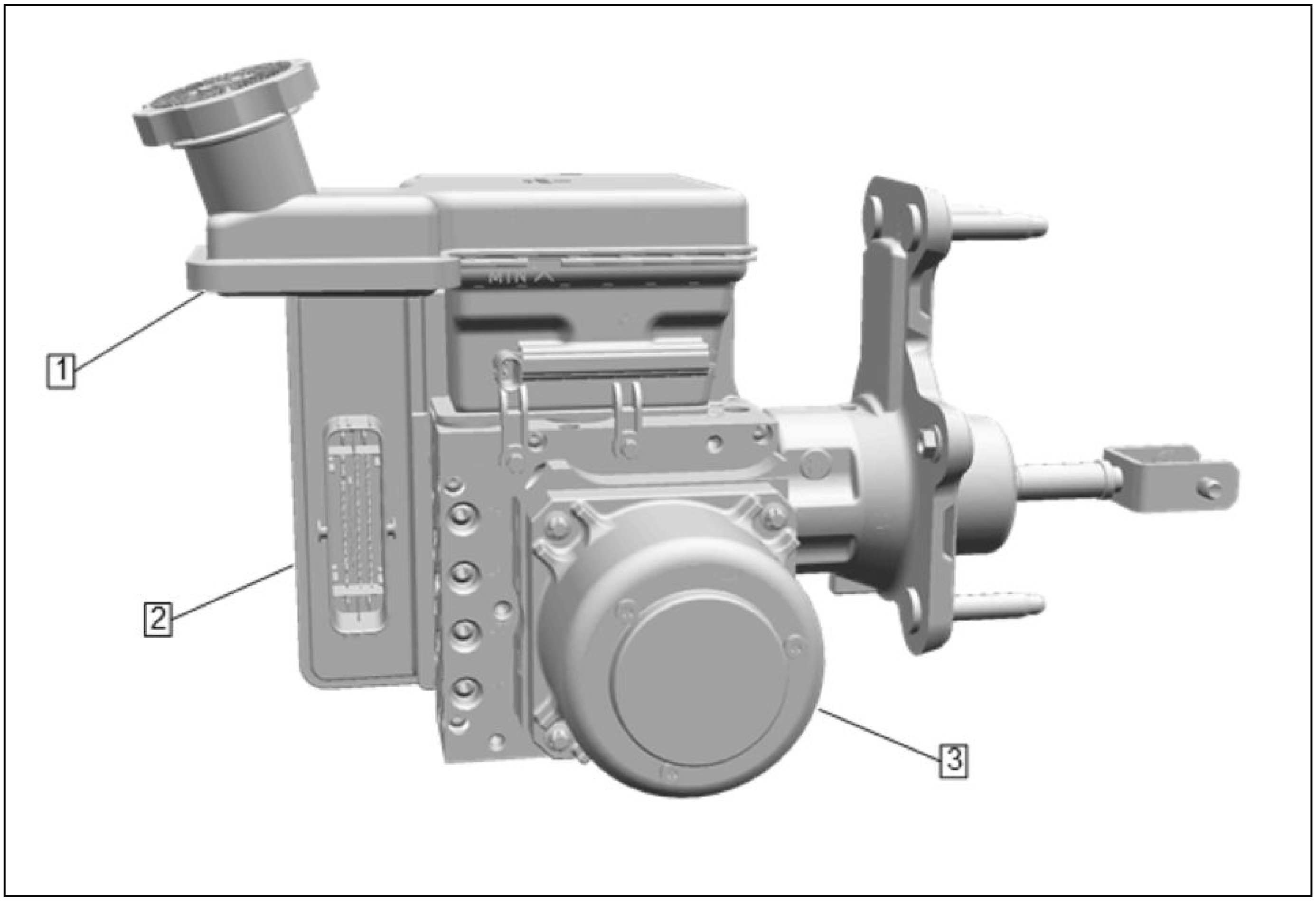
Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
No Brake Assist with Electric Park Brake Assist	• - Hydraulic brake assist not available. • - Brake System uses Electric Park Brake to assist driver braking.	• - Pedal feel: Slightly stiffer than normal. • - Brake pedal effort to deceleration: Onset of braking is similar but more force required to achieve same deceleration compared with Full Brake Assist. • - Minimal non linearities in deceleration due to use of Electric Park Brake. • - Pedal travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
No Brake Assist (Push Thru)	• - No hydraulic or Electric Park brake assist available. • - Driver pedal force distributes equal pressure to all 4 wheels	• - Pedal feel: Slightly softer than normal. • - Brake pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist with Electric Park Brake Assist. • - Pedal Travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed (Not displayed for full power loss or critical micro failures)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
Two Wheel No Brake Assist (2 Wheel Push Thru)	• - Hydraulic brake assist not available. • - Brake system applies and releases Electric Park Brake proportional to driver pedal force to assist driver braking.	• - Pedal feel: Significantly softer than normal. • - Brake Pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Brake Fade Detected Level 1	• - Normal hydraulic brake assist available. • - Brakes system estimates brake temps of 500 - 600 deg C. • - Driver warned with DIC display. • - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming). • - If brake assist gain was not changed, the brake overtemp would not be as noticeable as on vacuum brake system.	• - Pedal feel: Normal • - Brake Pedal effort to deceleration: Not significantly changed • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Reduce Braking to Avoid Overheating	None
Brake Fade Detected Level 2	• - Same as Level 1 but brake temperature 700 - 900 deg C. • - Degradation in brake lining output may become noticeable. • - Degradation in response time may become noticeable. • - Far better performance than a vacuum system.	• - Pedal feel: Normal. • - Brake Pedal effort to deceleration: Increase in effort required based on temperature of brake which decreases brake pad output. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brakes Overheated Service Now	None

Hydraulic Brake System Description and Operation

System Component Description

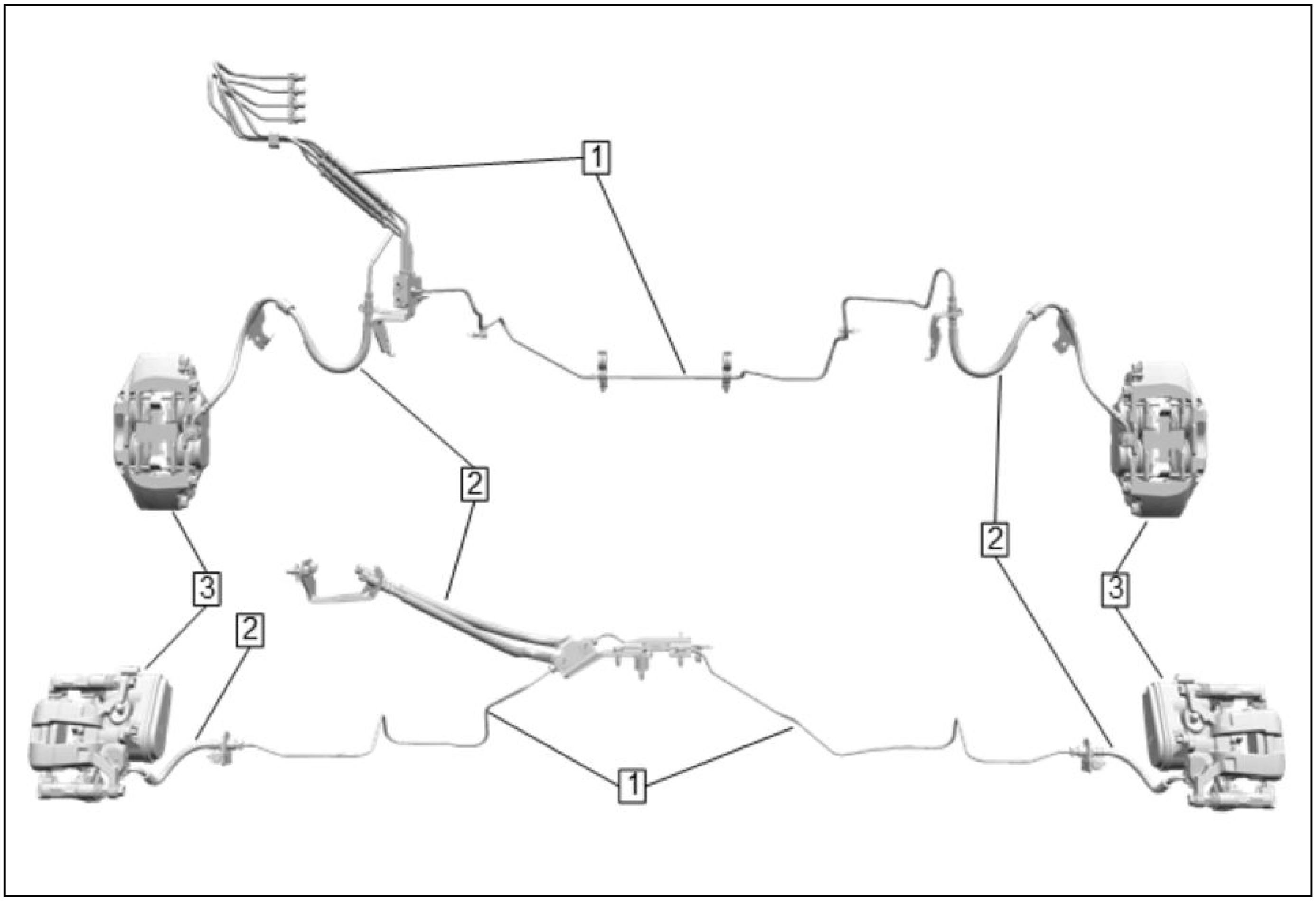
The hydraulic brake system consists of the following:



Note: The above graphic may not be an exact representation for every vehicle configuration.

Brake Master Cylinder Fluid Reservoir (1): Contains supply of brake fluid for the hydraulic brake system.

Electronic Brake Booster Control Module (2) and Brake Master Cylinder (3): The brake master cylinder and the electronic brake booster control module take the driver applied brake demand and transforms this into an amplified brake pressure. The integrated brake pressure modulator valve controls hydraulic pressure to each wheel independently and can be responsible for ABS, traction control, and stability control.



5039057

Note: The above graphic may not be an exact representation for every vehicle configuration.

Hydraulic Brake Pipes (1) and Flexible Brake Hoses (2): Carries brake fluid to and from hydraulic brake system components.

Brake Calipers (3): Converts hydraulic input pressure into mechanical output force.

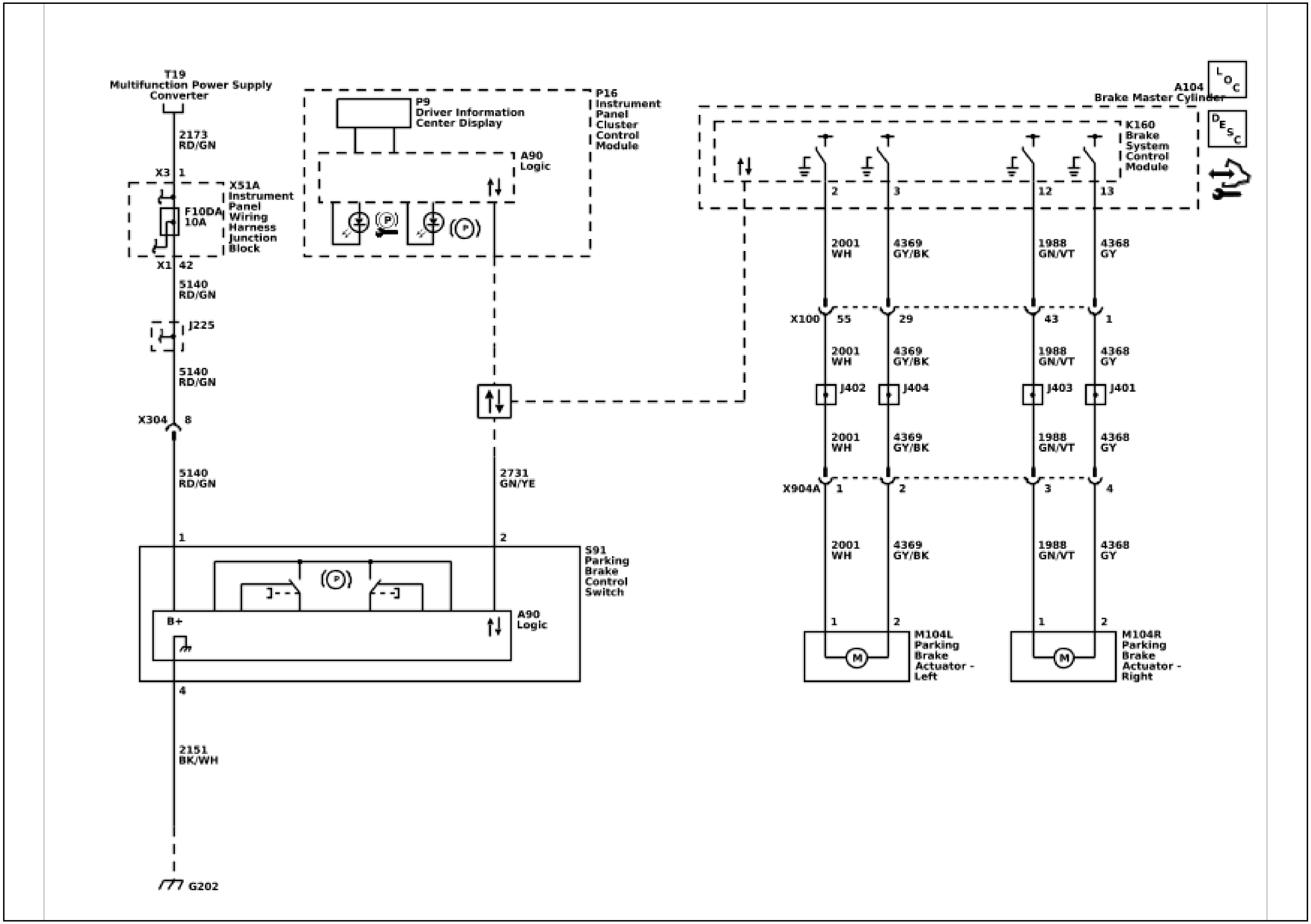
System Operation

Mechanical force is converted into hydraulic pressure by the master cylinder, regulated to meet braking system demands by the pressure balance control system, and delivered to the hydraulic brake wheel circuits by the pipes and flexible hoses. The wheel apply components then convert the hydraulic pressure back into mechanical force which presses linings against rotating brake system components.

Park Brake

Schematic and Routing Diagrams

Park Brake System Schematics (Park Brake System Schematics)


T19
Multifunction Power Supply Converter
2173
RD/GN
X3 1
X51A
Instrument Panel Wiring Harness Junction Block
F10DA
10A
X1 42
5140
RD/GN
J225
5140
RD/GN
X304 8
5140
RD/GN
1
P9
Driver Information Center Display
P16
Instrument Panel Cluster Control Module
A90
Logic
2731
GN/YE
2
S91
Parking Brake Control Switch
B+
A90
Logic
4
2151
BK/WH
G202
A104
Brake Master Cylinder
K160
Brake System Control Module
2
3
12
13
2001
WH
4369
GY/BK
1988
GN/VT
4368
GY
X100 55
29
43
1
J402
J404
J403
J401
X904A 1
2
3
4
M104L
Parking Brake Actuator - Left
M104R
Parking Brake Actuator - Right
LOC
DESC

6853078

Description and Operation

Electronic Parking Brake Description

Vehicles with the electric parking brake have a switch in the center console or on the dash, which takes the place of the manual parking brake system, the foot pedal and release handle. In case of insufficient electrical power, the electric parking brake cannot be applied or released.

Electronic Brake Control Module/Brake System Control Module

The parking brake function is integrated into the Electronic Brake Control Module/Brake System Control Module. The module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Switch.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module/Brake System Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module/Brake System Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release. In some vehicles, the Park Brake Switch is a push-button style switch. When the switch is pressed, the park brakes are commanded to either apply or release based off of their current position.

The Electronic Brake Control Module/Brake System Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the caliper pistons, ultimately applying and releasing the park brake.

The Park Brake Motor Position Sensor is an internal sensor to the park brake actuator. This sensor is used to monitor the park brake motor position.

Electric Parking Brake Apply

The electric parking brake can be applied any time the vehicle is stopped or in motion. The electric parking brake is applied by momentarily operating the park brake control switch. The red park brake light will momentarily flash while the parking brake is being applied. Once fully applied, the red park brake light will turn on. If the electric parking brake is applied while the vehicle is in motion, the vehicle will decelerate as long as the switch is being operated. If the switch is operated until the vehicle comes to a stop, the park brake will remain applied.

If the red park brake light is flashing, the electric parking brake is only partially applied or released, or there is a problem with the electric parking brake. A DIC message will display.

The vehicle may automatically apply the electric parking brake in some situations when the vehicle is not moving. This is normal, and is done to periodically check the correct operation of the electric parking brake system.

Electric Parking Brake Release

To release the electric parking brake, turn the ignition switch to the ON or RUN position, apply, and hold the brake pedal, and push down momentarily on the park brake control switch. When the electric parking brake is released the red park brake light turns off.

Automatic Electric Parking Brake Release

The parking brake will automatically release if the vehicle is running, placed into gear, and an attempt is made to drive away. Avoid rapid acceleration when the parking brake is applied to preserve parking brake lining life.

Section 3

Driveline/Axle

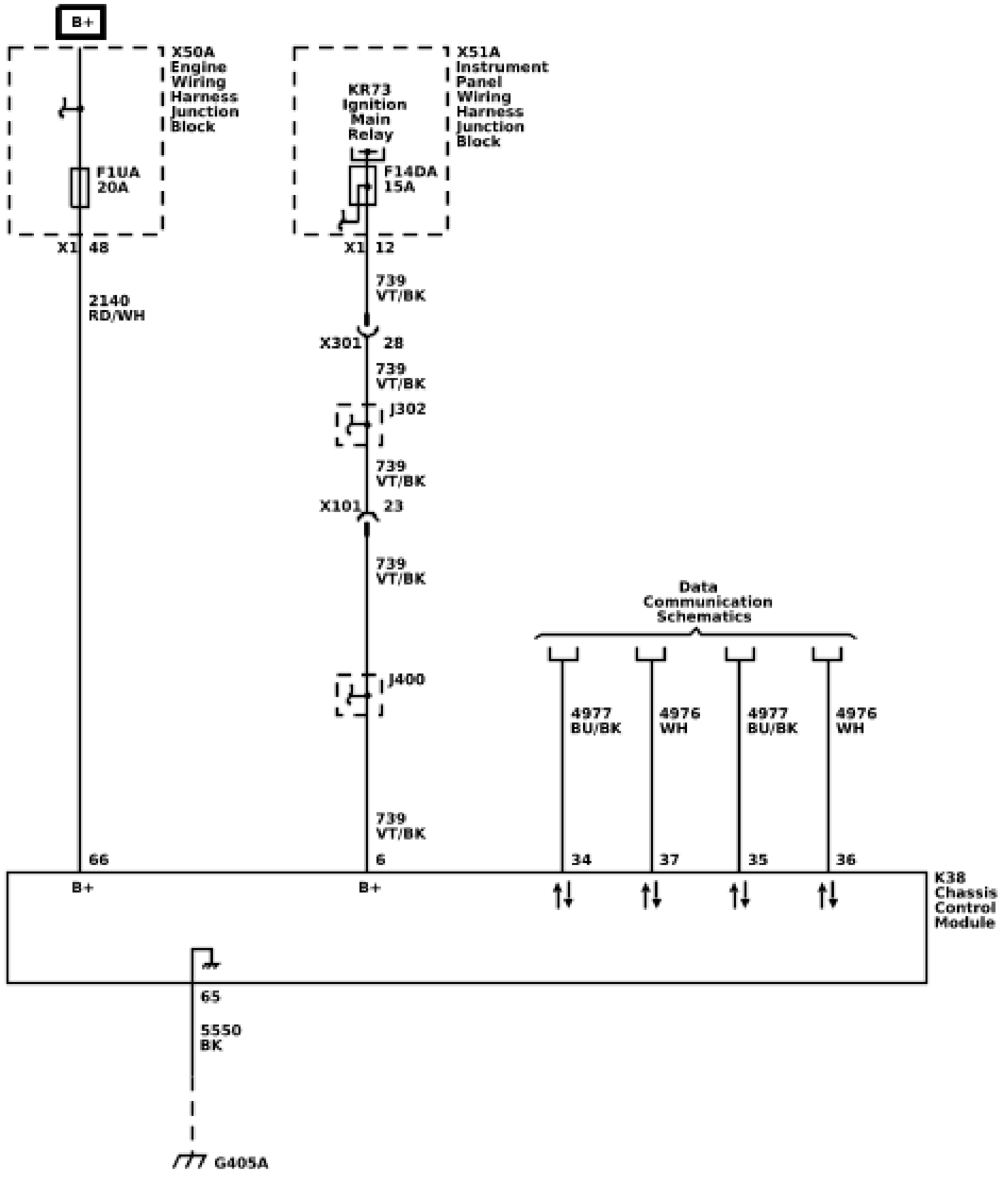
Rear Drive Axle 3-2
- **Schematic and Routing Diagrams** 3-2
  - Differential Lock Schematics 3-3
- **Description and Operation** 3-5
  - Rear Axle Electronic Locking Differential Description and Operation 3-5

Driveline/Axle

Rear Drive Axle

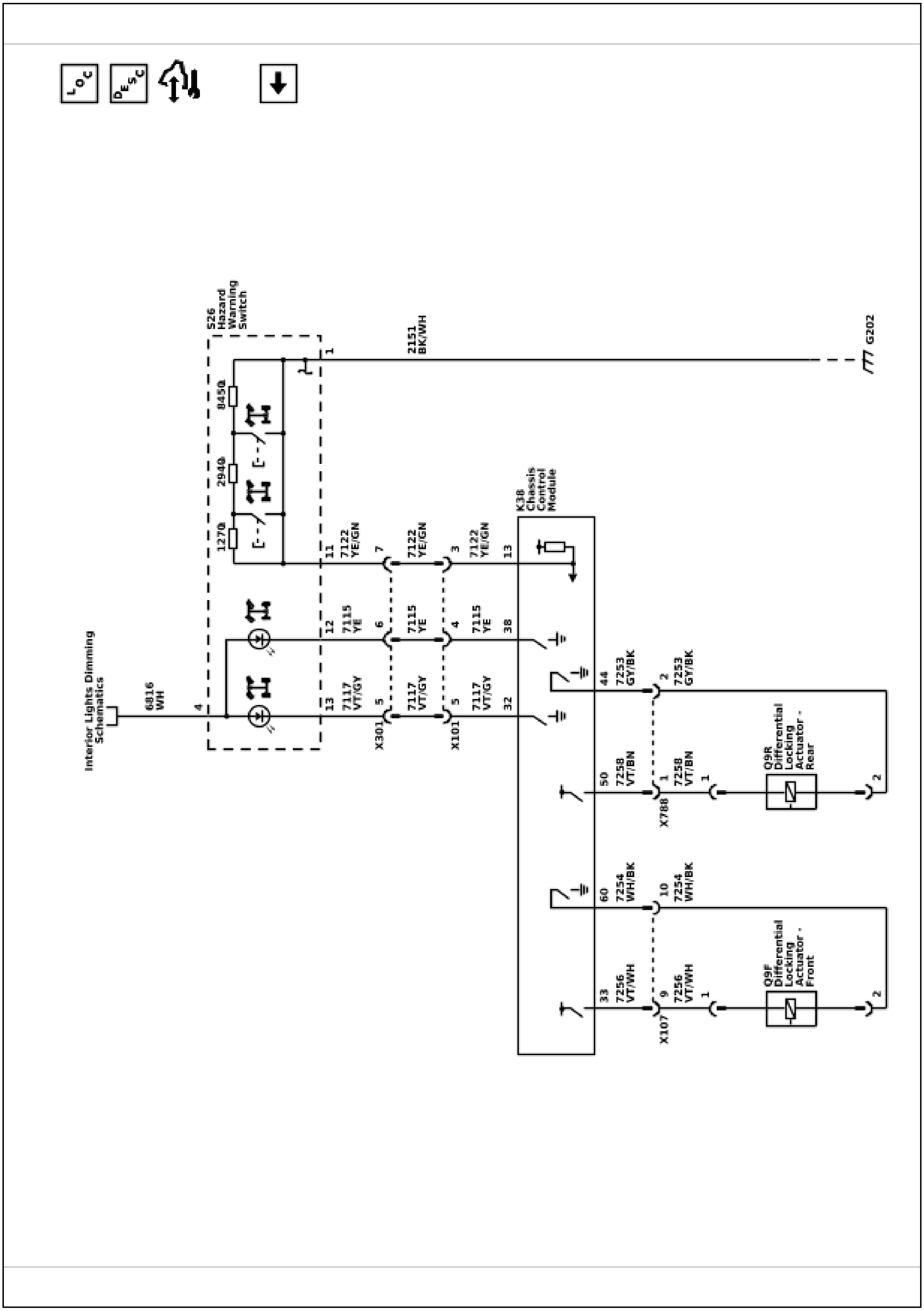
Schematic and Routing Diagrams

Differential Lock Schematics (Module Power, Ground, Serial Data (G93 / G94))


B+
X50A Engine Wiring Harness Junction Block
F1UA 20A
X1 48
2140 RD/WH
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F14DA 15A
X1 12
739 VT/BK
X301 28
739 VT/BK
J302
739 VT/BK
X101 23
739 VT/BK
J400
739 VT/BK
Data Communication Schematics
4977 BU/BK
4976 WH
4977 BU/BK
4976 WH
66
6
34
37
35
36
B+
B+
K38 Chassis Control Module
65
5550 BK
G405A

6852977

Differential Lock Schematics (Controls, Indicators, and Locking Actuators (G93 / G94))


6852978
S26 Hazard Warning Switch
Interior Lights Dimming Schematics
6816 WH
4
127Ω
294Ω
845Ω
1
2151 BK/WH
G202
11
7122 YE/GN
7
3
13
12
7115 YE
6
4
38
13
7117 VT/GY
5
32
X301
X101
K38 Chassis Control Module
44
7253 GY/BK
2
50
7258 VT/BN
1
X788
Q9R Differential Locking Actuator - Rear
60
7254 WH/BK
10
33
7256 VT/WH
9
X107
Q9F Differential Locking Actuator - Front

Description and Operation

Rear Axle Electronic Locking Differential Description and Operation

The electronic locking differential functions as an open differential when not engaged while providing the capability to fully lock the differential based on driver request and vehicle engagement conditions. Locking of the rear differential provides 100% of the available torque to both ends of the axle forcing the left and right wheels to rotate at the same speed.

The rear axle differential lock is available in 2 H, 4 Auto, 4 High or 4 Lo. The Normal/Off-Road mode switch provides an input to the Body Control Module (BCM) which sends the selected vehicle mode to the Integrated Chassis Control Module (ICCM) through the High Speed GMLAN. The ICCM uses this message to determine rear locker engagement/disengagement based upon vehicle speed

- Normal mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)
- Off road mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)

In addition to engagement/disengagement of the differentials, the mode switch signal is used to disable the ABS and ESC features when the front axle is locked in Normal mode. The momentary Rear Lock switch provides an ICCM input to energize the rear axle differential lock high control and low control relays. The relays provide power to energize an electromagnetic actuator within the rear differential. As the electromagnet is energized, torque is created on a drag plate which actuates a ramping mechanism. The ramping mechanism translates this rotational force into the axial motion of a locking mechanism. The locking mechanism engages the differential side gear which locks side gear rotation to the differential housing, providing a fully locked differential.

The ICCM uses wheel speed sensor signals from the Electronic Brake Control Module (EBCM) and a steering angle sensor signal from the Power Steering Control Module (PSCM) to determine if the axle is locked. The ICCM will illuminate the rear axle lock switch indicator and send a Rear Axle Locked indicator request to the BCM which transfers the message request to the Instrument Panel Cluster (IPC). The IPC will display a rear axle locked state on the Off Road DIC screen. The rear axle will remain in the locked position until one of the following events occur:

- A driver request to disengage
- Vehicle speed is greater than 40 km/h (25 mph) in Normal Mode
- Vehicle speed is greater than 160 km/h (100 mph) in Off-Road Mode
- An ABS or ESC event in OFF Road Mode and vehicle speed is greater than 40 km/h (25 mph)

When the locking differential is deactivated, the ICCM will de-energize the rear axle differential lock high control and low control relays. With the electromagnetic actuator deenergized, a series of return springs within the differential lock assembly forces the locking mechanism to disengage and the differential again operates as a fully open differential.

Section 4

Driver Information and Entertainment

Cellular, Entertainment, and Navigation **4-2**

Schematic and Routing Diagrams **4-2**

Radio/Navigation System Schematics 4-3

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Description and Operation **4-12**

OnStar Description and Operation 4-12

Radio/Audio System Description and Operation 4-17

Displays and Gauges **4-27**

Schematic and Routing Diagrams **4-27**

Instrument Cluster Schematics 4-28

Head-Up Display Schematics 4-30

Audible Warnings Schematics 4-31

Description and Operation **4-32**

Audible Warnings Description and Operation 4-32

Head-Up Display Description and Operation 4-33

Indicator/Warning Message Description and Operation 4-33

Instrument Cluster Description and Operation 4-34

Image Display Cameras **4-35**

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Description and Operation **4-38**

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Secondary and Configurable Customer Controls **4-41**

Schematic and Routing Diagrams **4-41**

Steering Wheel Secondary/Configurable Control Schematics 4-42

Description and Operation **4-44**

Drive Mode Description and Operation 4-44

Steering Wheel Controls Description and Operation 4-44

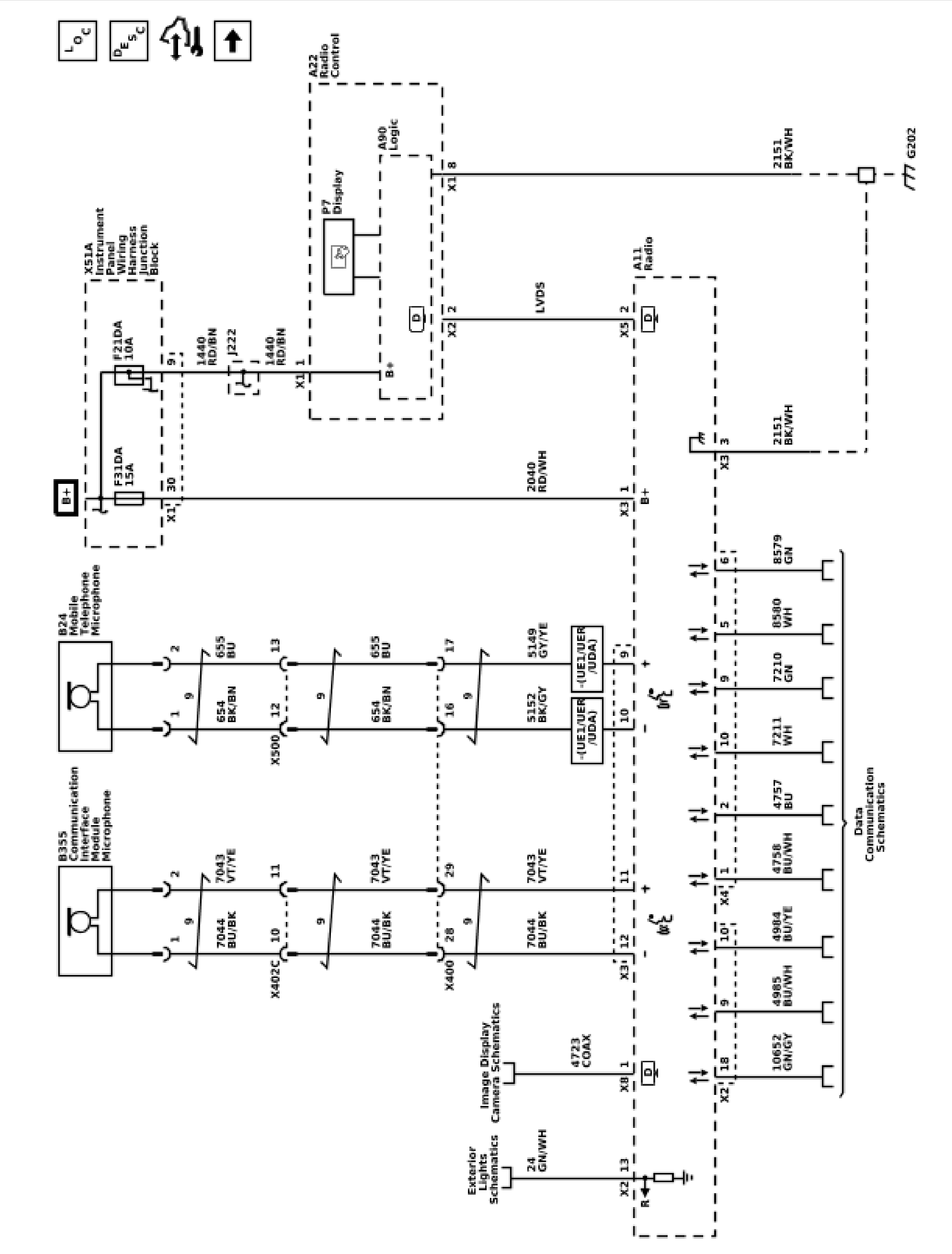
Driver Information and Entertainment

Cellular, Entertainment, and Navigation

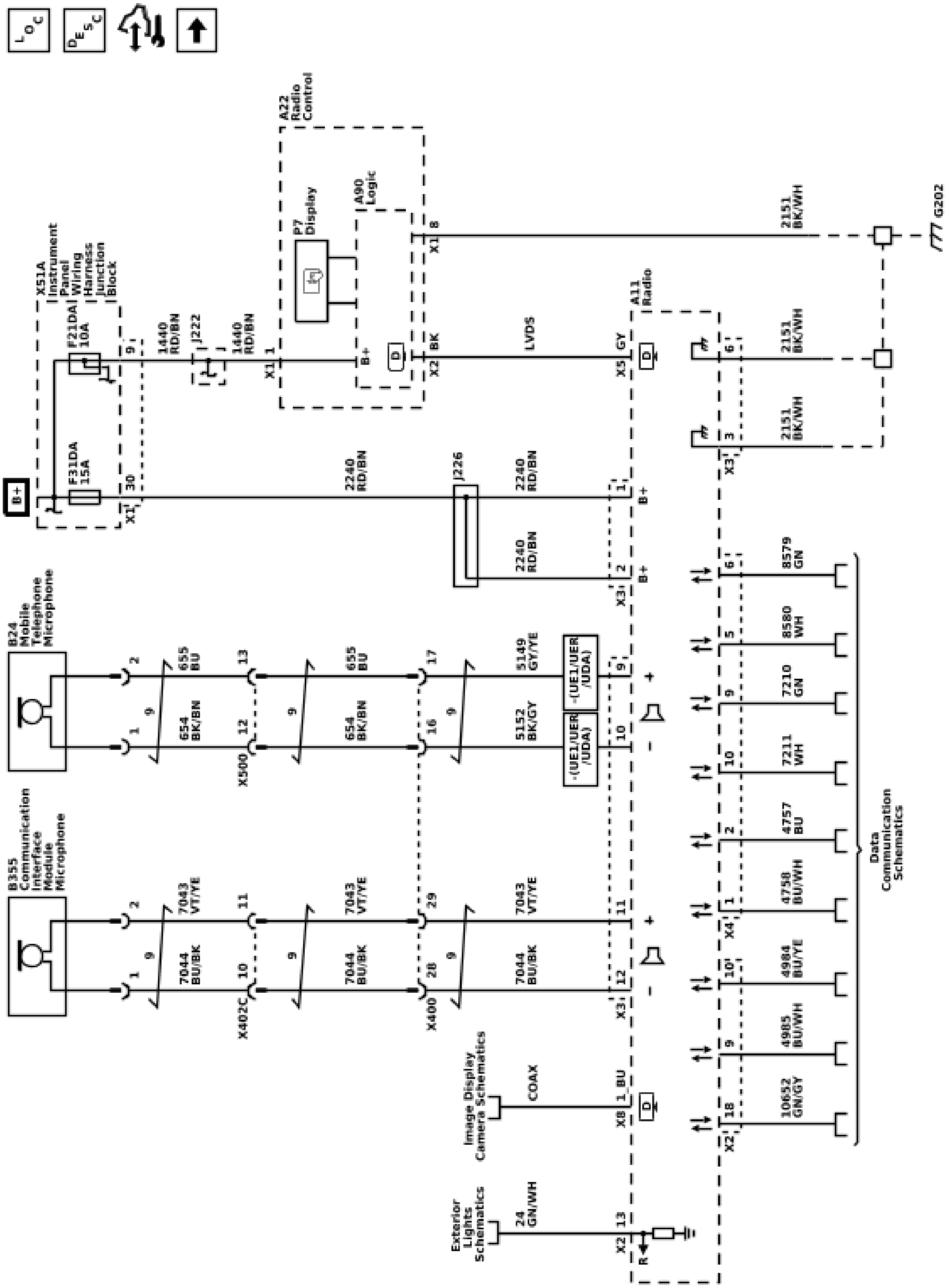
Schematic and Routing Diagrams

Radio/Navigation System Schematics (Power, Ground, Serial Data, Microphone, and Subsystem References (UQA))

6853119

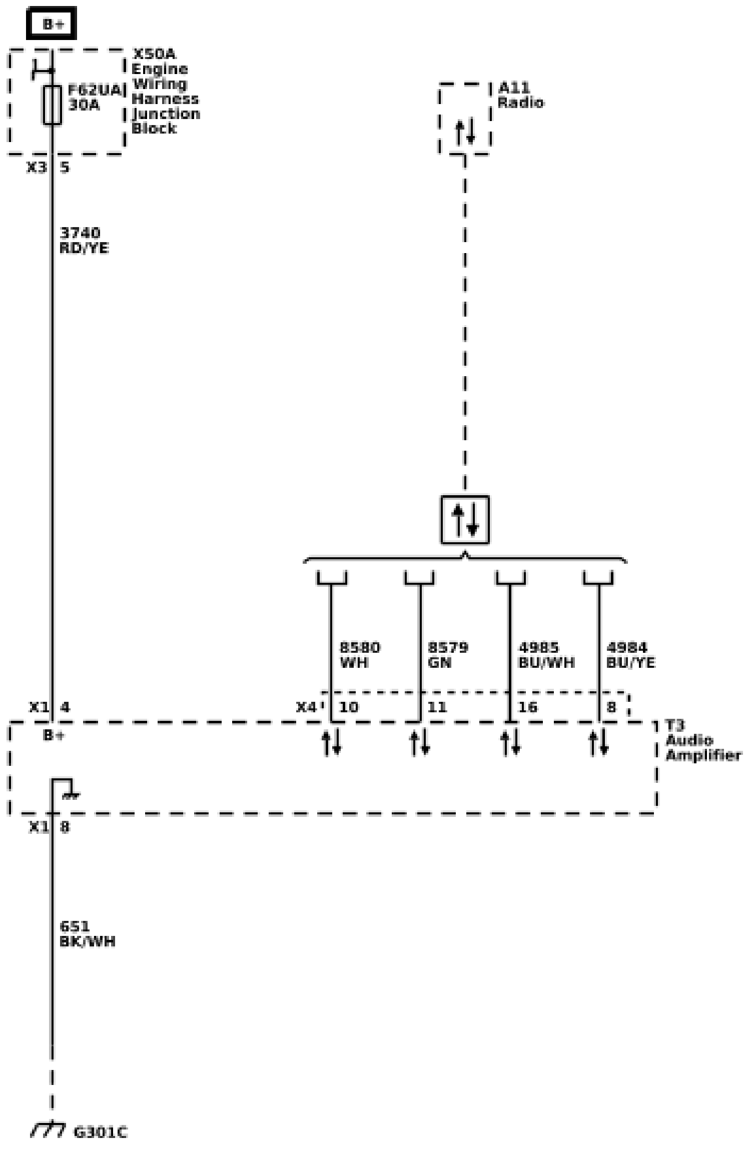

B+
X51A Instrument Panel Wiring Harness Junction Block
F31DA 15A
F21DA 10A
X1 30
9
1440 RD/BN
J222
1440 RD/BN
X1 1
A22 Radio Control
P7 Display
A90 Logic
B+
X2 2
X1 8
D
LVDS
2151 BK/WH
G202
2040 RD/WH
A11 Radio
X5 2
X3 1
B+
X3 3
2151 BK/WH
B24 Mobile Telephone Microphone
B355 Communication Interface Module Microphone
655 BU
654 BK/BN
13
12
X500
655 BU
654 BK/BN
17
16
5149 GY/YE
5152 BK/GY
-(UE1/UER/UDA)
9
10
+
-
7043 VT/YE
7044 BU/BK
11
10
X402C
7043 VT/YE
7044 BU/BK
29
28
X400
7043 VT/YE
7044 BU/BK
11
12
X3
Image Display Camera Schematics
4723 COAX
X8 1
Exterior Lights Schematics
24 GN/WH
X2 13
R
6
8579 GN
5
8580 WH
9
7210 GN
10
7211 WH
2
4757 BU
X4 1
4758 BU/WH
10
4984 BU/YE
9
4985 BU/WH
X2 18
10652 GN/GY
Data Communication Schematics
LOC
DESC

Radio/Navigation System Schematics (Power, Ground, Serial Data, Microphone, and Subsystem References (UQ3))


B+
X51A Instrument Panel Wiring Harness Junction Block
F31DA 15A
F21DA 10A
X1 30
9
1440 RD/BN
J222
1440 RD/BN
X1 1
A22 Radio Control
P7 Display
A90 Logic
B+
D
X1 8
X2 BK
LVDS
X5 GY
D
A11 Radio
2151 BK/WH
2151 BK/WH
2151 BK/WH
G202
6
X3 3
2240 RD/BN
J226
2240 RD/BN
2240 RD/BN
1 B+
X3 2 B+
B24 Mobile Telephone Microphone
2
1
9
655 BU
654 BK/BN
13
12
X500
655 BU
654 BK/BN
17
16
X500
5149 GY/YE
5152 BK/GY
-(UE1/UER/UDA)
-(UE1/UER/UDA)
9
10
+
-
B355 Communication Interface Module Microphone
2
1
7043 VT/YE
7044 BU/BK
11
10
X402C
7043 VT/YE
7044 BU/BK
29
28
X400
7043 VT/YE
7044 BU/BK
11
X3 12
+
-
Image Display Camera Schematics
COAX
X8 1_BU
D
Exterior Lights Schematics
24 GN/WH
X2 13
R
6
8579 GN
5
8580 WH
9
7210 GN
10
7211 WH
2
4757 BU
X4 1
4758 BU/WH
10
4984 BU/YE
9
4985 BU/WH
X2 18
10652 GN/GY
Data Communication Schematics

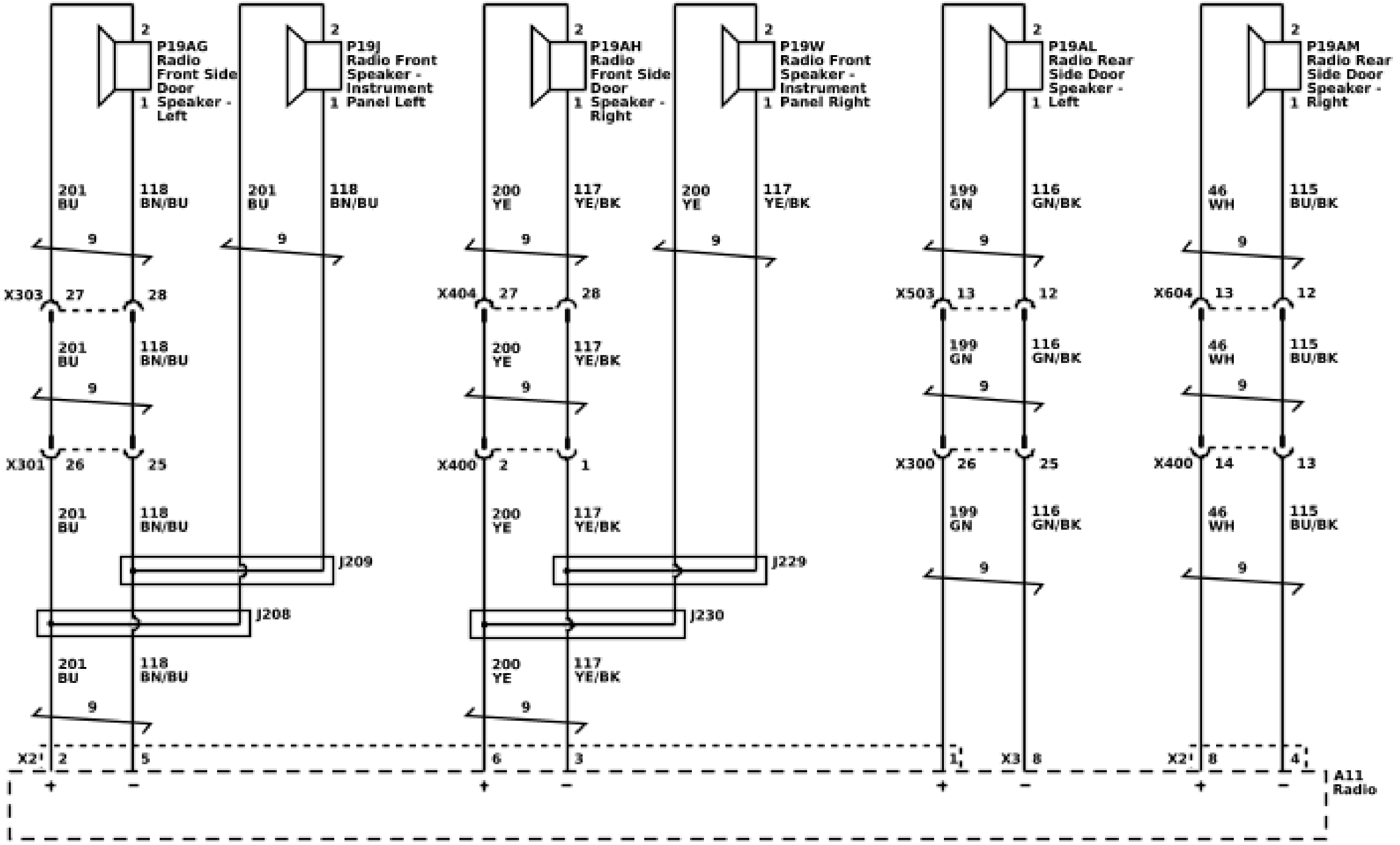
6853120

Radio/Navigation System Schematics (Audio Amplifier Power, Ground and Serial Data (UQA))


B+
X50A
Engine
Wiring
Harness
Junction
Block
F62UA
30A
X3 5
3740
RD/YE
A11
Radio
8580
WH
8579
GN
4985
BU/WH
4984
BU/YE
X4 10
11
16
8
X1 4
B+
T3
Audio
Amplifier
X1 8
651
BK/WH
G301C

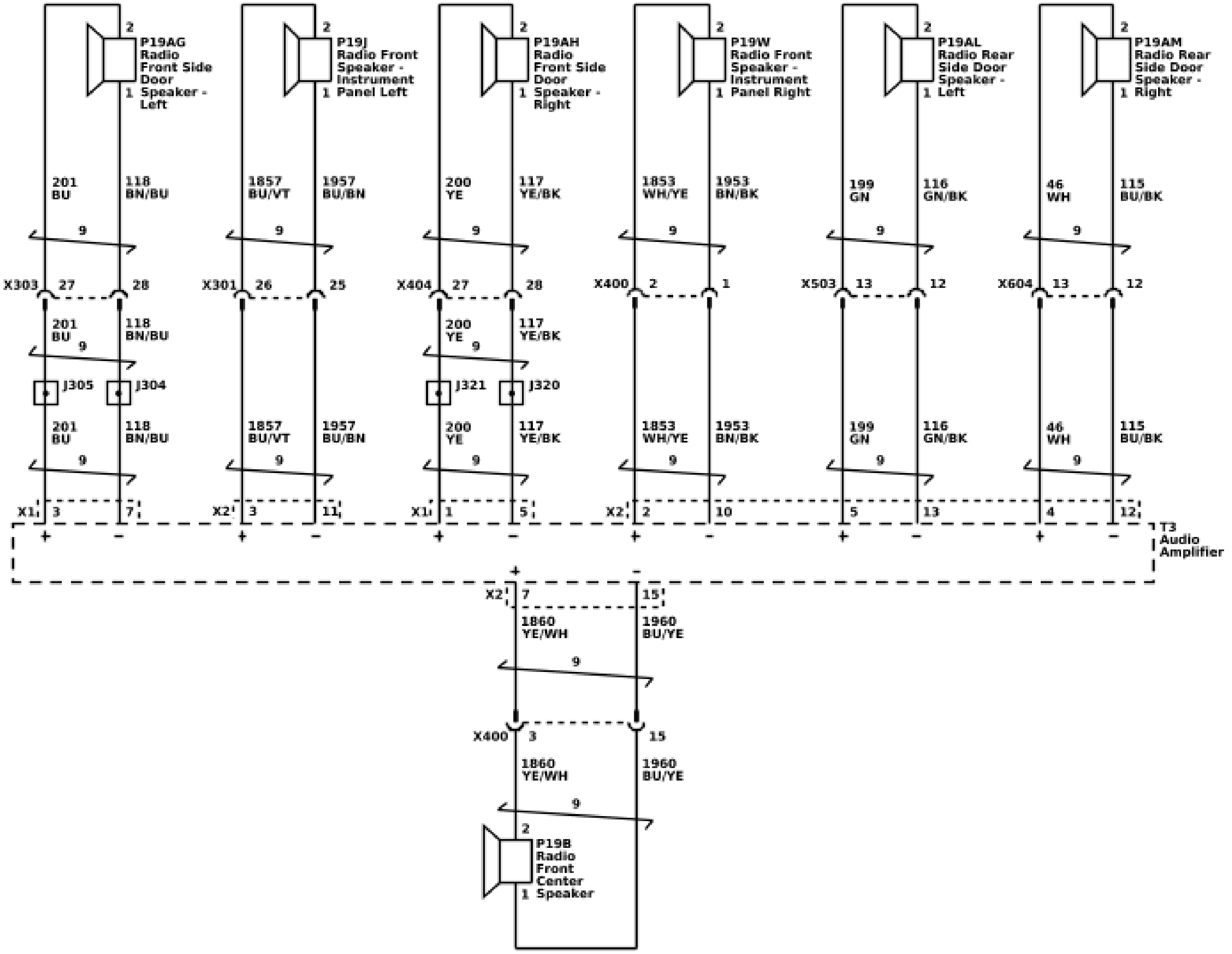
6853121

Radio/Navigation System Schematics (Speakers (UQ3))


P19AG Radio Front Side Door Speaker - Left
P19J Radio Front Speaker - Instrument Panel Left
P19AH Radio Front Side Door Speaker - Right
P19W Radio Front Speaker - Instrument Panel Right
P19AL Radio Rear Side Door Speaker - Left
P19AM Radio Rear Side Door Speaker - Right
1
2
201 BU
118 BN/BU
200 YE
117 YE/BK
199 GN
116 GN/BK
46 WH
115 BU/BK
9
X303
27
28
X404
X503
13
12
X604
X301
26
25
X400
2
1
X300
14
13
J209
J208
J229
J230
X2
X3
6
3
5
8
4
+
-
A11 Radio

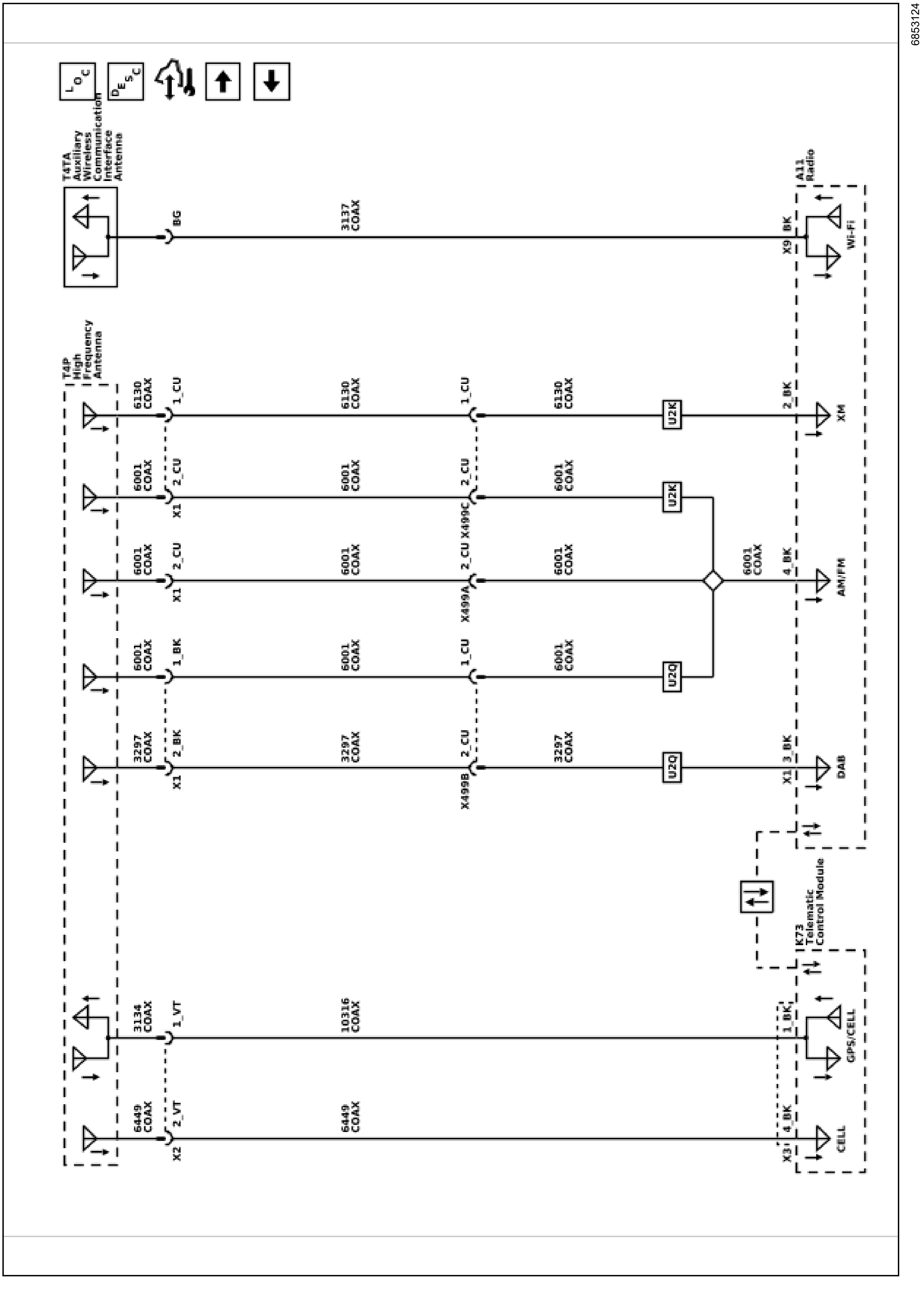
6853122

Radio/Navigation System Schematics (Speakers (UQA))

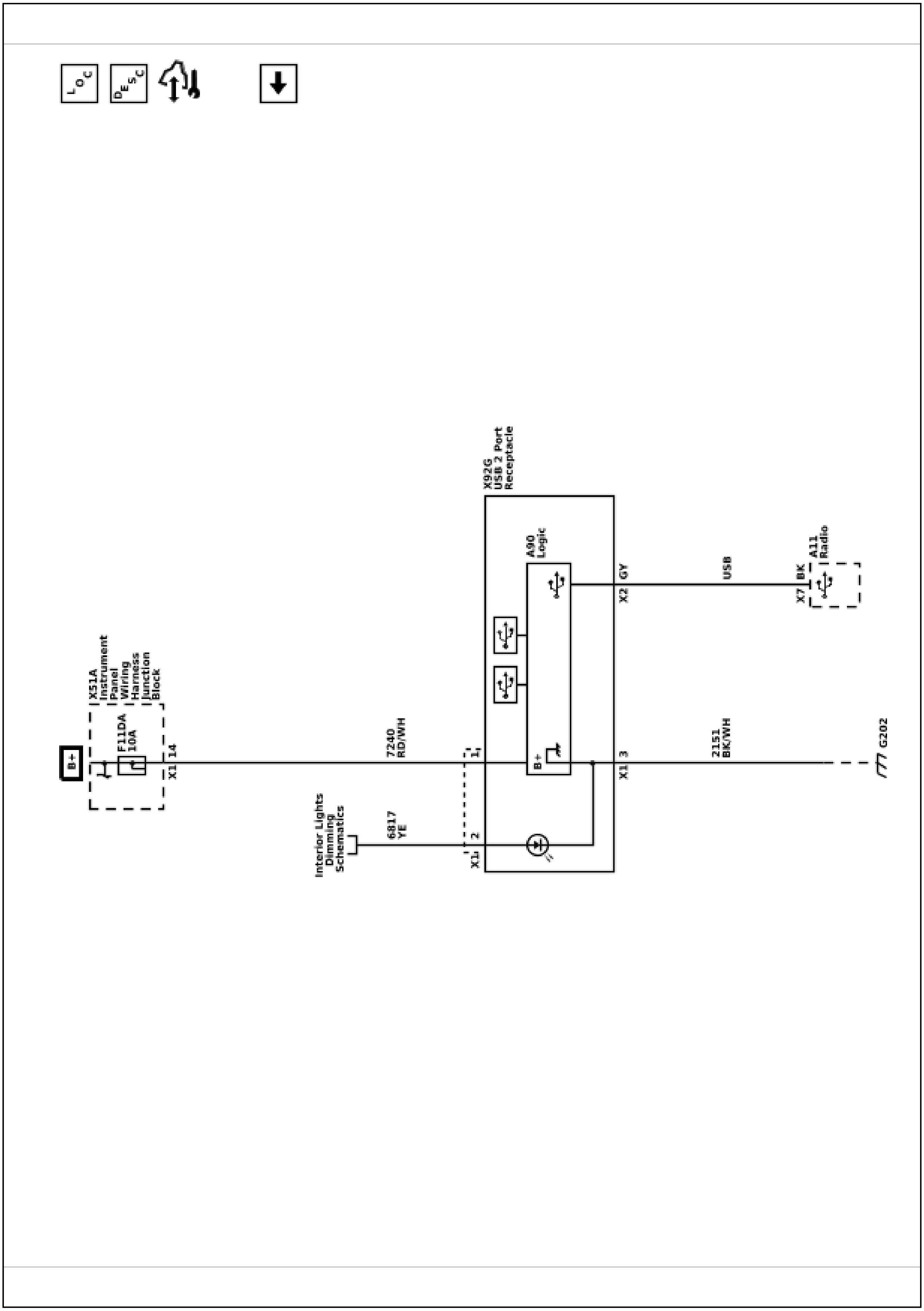

P19AG Radio Front Side Door Speaker - Left
P19J Radio Front Speaker - Instrument Panel Left
P19AH Radio Front Side Door Speaker - Right
P19W Radio Front Speaker - Instrument Panel Right
P19AL Radio Rear Side Door Speaker - Left
P19AM Radio Rear Side Door Speaker - Right
P19B Radio Front Center Speaker
T3 Audio Amplifier
201 BU
118 BN/BU
1857 BU/VT
1957 BU/BN
200 YE
117 YE/BK
1853 WH/YE
1953 BN/BK
199 GN
116 GN/BK
46 WH
115 BU/BK
1860 YE/WH
1960 BU/YE
X303 27 28
X301 26 25
X404 27 28
X400 2 1
X503 13 12
X604 13 12
J305
J304
J321
J320
X1 3 7
X2 3 11
X1 1 5
X2 2 10
5 13
4 12
X2 7 15
X400 3 15
9
+
-

6853123

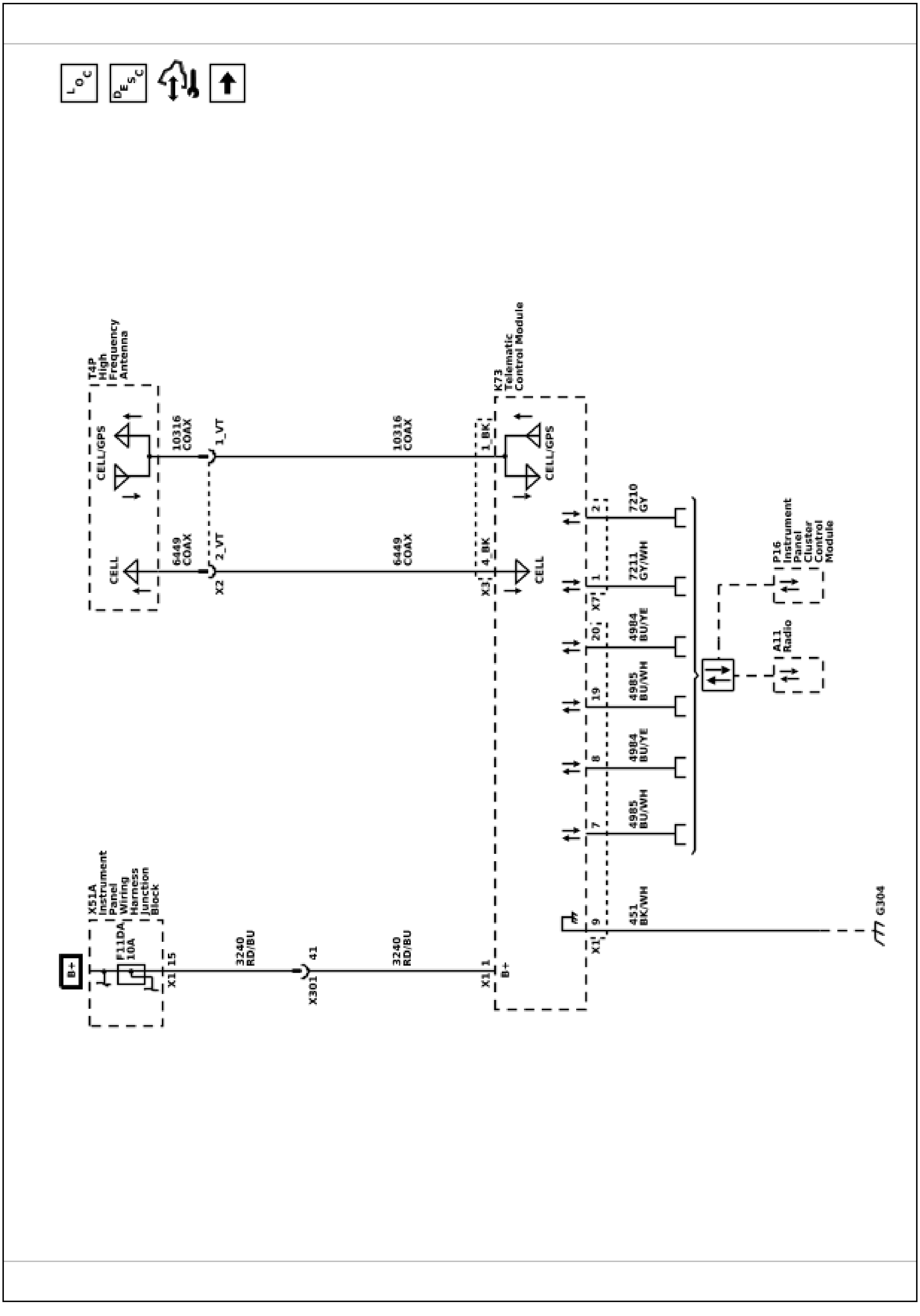
Radio/Navigation System Schematics (Antennas)


6853124
LOC
DESC
T4TA Auxiliary Wireless Communication Interface Antenna
BG
3137 COAX
X9 BK
A11 Radio
Wi-Fi
T4P High Frequency Antenna
6130 COAX
1_CU
6130 COAX
1_CU
6130 COAX
U2K
2_BK
XM
6001 COAX
X1 2_CU
6001 COAX
2_CU X499C
6001 COAX
U2K
6001 COAX
X1 2_CU
6001 COAX
2_CU X499A
6001 COAX
6001 COAX
4_BK
AM/FM
6001 COAX
1_BK
6001 COAX
1_CU
6001 COAX
U2Q
3297 COAX
X1 2_BK
3297 COAX
2_CU X499B
3297 COAX
U2Q
X1 3_BK
DAB
K73 Telematic Control Module
3134 COAX
1_VT
10316 COAX
1_BK
GPS/CELL
6449 COAX
X2 2_VT
6449 COAX
X3 4_BK
CELL

Radio/Navigation System Schematics (Auxiliary Input)

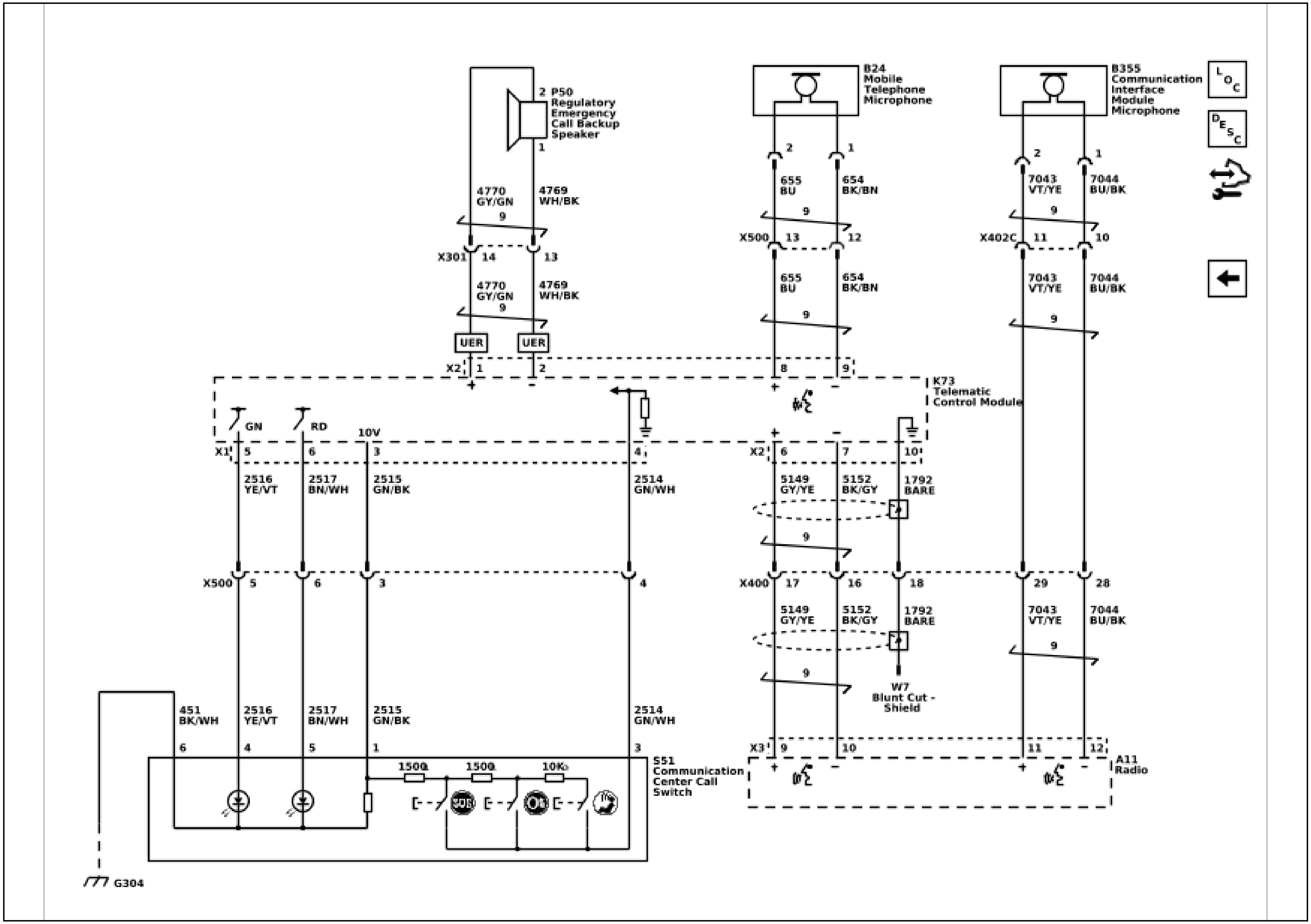

6853125
X51A Instrument Panel Wiring Harness Junction Block
B+
F11DA 10A
X1 14
7240 RD/WH
X1 1
X92G USB 2 Port Receptacle
A90 Logic
B+
X2 GY
USB
X7 BK
A11 Radio
X1 3
2151 BK/WH
G202
Interior Lights Dimming Schematics
6817 YE
X1 2

OnStar/Telematics Schematics (Power, Ground, Serial Data and Antennas)


L O C
D E S C
B+
X51A Instrument Panel Wiring Harness Junction Block
F11DA 10A
X1 15
3240 RD/BU
X301 41
3240 RD/BU
X1 1
B+
T4P High Frequency Antenna
CELL/GPS
CELL
10316 COAX
1_VT
6449 COAX
2_VT
X2
10316 COAX
6449 COAX
X3 1_BK
4_BK
K73 Telematic Control Module
CELL/GPS
CELL
X7 2
1
7210 GY
7211 GY/WH
20
19
8
7
4984 BU/YE
4985 BU/WH
4984 BU/YE
4985 BU/WH
X1 9
451 BK/WH
G304
P16 Instrument Panel Cluster Control Module
A11 Radio

6853073

OnStar/Telematics Schematics (Controls and Audio Signals)


B355 Communication Interface Module Microphone
B24 Mobile Telephone Microphone
P50 Regulatory Emergency Call Backup Speaker
1
2
4770 GY/GN
4769 WH/BK
9
X301
14
13
UER
UER
X2
655 BU
654 BK/BN
X500
13
12
7043 VT/YE
7044 BU/BK
X402C
11
10
8
9
K73 Telematic Control Module
GN
RD
10V
X1
5
6
3
4
2516 YE/VT
2517 BN/WH
2515 GN/BK
2514 GN/WH
X2
6
7
10
5149 GY/YE
5152 BK/GY
1792 BARE
X500
X400
17
16
18
29
28
W7 Blunt Cut - Shield
451 BK/WH
X3
9
10
11
12
A11 Radio
S51 Communication Center Call Switch
150Ω
150Ω
10KΩ
G304

6853074

Description and Operation

OnStar Description and Operation

The OnStar® system consists of the following components:

- Telematic Control Module
- OnStar® Three Button Assembly
- Microphones
- Cellular Antenna
- Navigation Antenna
- Back Up Battery

The OnStar® system supports the following capabilities:

- WiFi Support
- TTY (Teletypewriter)
- FOTA (Firmware Over The Air)

This system also interfaces with the factory installed vehicle audio system.

Telematic Control Module

The OnStar® Telecommunications Platform (TCP) system communicates with various infotainment components via ethernet. The OnStar® TCP uses Global System for Mobile Communication (GSM) to communicate data and voice signals over the national cellular network. The Telematic Control Module (TCM) supports entertainment WiFi Hotspots by providing a connection to the cellular network for internet access. The module is capable of up to 5G LTE speeds and houses 2 technology systems, one to process Global Positioning System (GPS) data, and another for cellular information. The module sends and receives all cellular communications over two cellular antennas and cellular antenna coax cables.

The OnStar® TCP system has two antenna inputs, a primary cellular signal and a combined GPS/secondary cellular signal. OnStar® can receive signals from multiple global navigation satellite systems, including the United States developed GPS and Russian developed Global Navigation Satellite System (GLONASS).

The module also has the capability of activating certain features such as, the horn, remote engine starting, initiating door lock/unlock, or activating the exterior lamps using the serial data circuits. These functions can be commanded by the OnStar® Call Center per a customer request or mobile device app depending on vehicle and customer subscription.

Dedicated circuits are used to connect the TCM to a microphone, the button assembly, and radio. When equipped, the TCM may contain a back up battery (BUB) which is internal to the control module and replaceable through an access cover. The TCM communicates with the rest of the vehicle over the serial data bus and Ethernet.

Power is provided by a dedicated, fused B+ circuit. Ground is provided through the vehicle wiring harness attached to the module. The power mode state is determined by the TCM through serial data messaging.

OnStar® Three Button Assembly

- The OnStar® button assembly may be part of the rearview mirror, or a separate, stand alone unit. The button assembly is comprised of 3 buttons or 3 capacitive touch buttons and status LED’s or an error indicator. The buttons are defined as follows:
  - The answer/end button, which is black with a white phone icon or a white driver figure seated with voice signals near its face, allows the user to answer and end calls or initiate speech recognition.
  - The blue OnStar® call center button, which displays the OnStar® logo, allows the user to connect to the OnStar® call center.
  - The emergency button, which displays white letters “SOS” with red background, sends a high priority emergency call to the OnStar® call center when pressed.

If the green LED does not illuminate, this may indicate that the customers OnStar® subscription is not active or has expired. Push the blue OnStar® button to connect to an advisor who can then verify the account status.

The TCM supplies 10 volts to the OnStar® button assembly on the keypad supply voltage circuit. When pressed, each button completes a circuit across a resistor allowing a specific voltage to be returned to the TCM on the keypad signal circuit. Depending upon the voltage range returned the TCM is able to identify which button has been pressed.

The OnStar® status LED or error indicator is located near the buttons. The LED is green when the system is ON and operating normally. When any indicator is illuminated and flashing, it is an indication that a call is in progress. When the LED is red, this indicates a system malfunction is present. In the event there is a system malfunction and the OnStar® system is still able to make a call, the LED will flash red during the call.

Each LED or error indicator is controlled by either the TCM over dedicated LED signal circuits or by low speed CAN 5 serial data depending on the inside rearview mirror option. Ground for the LED is provided by the wiring harness attached to the button assembly.

Secondary OnStar® Controls

Some vehicles may have an additional button that when pushed can engage the OnStar® system. The button may be a symbol of a face with sound waves, or may say MUTE, or be a symbol of a radio speaker with a slash through it.

By engaging the OnStar® system with this feature, the user can interact with the system by use of voice commands. A complete list of these commands is supplied in the information provided to the customer. If the information is not available for reference, at any command prompt the user can say "HELP" and the TCM will return an audible list of available commands.

Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the TCM. It is also connected by an analog pass-through circuit to the radio from the TCM.
The secondary microphone is connected directly to the radio.

The primary microphone is used for emergency and OnStar® calls. During normal operating conditions it also provides Bluetooth® calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. For model year 2018 and beyond the secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar® call.
The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar® call requires the microphone to be directly connected to the TCM. During a normal (non-emergency) OnStar® call the TCM receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar® call audio and sends it back to the TCM via the Ethernet connection. During an emergency button call the TCM contacts the OnStar® call center directly and does not send the signal to the radio.

Cellular and GPS Antennas

The combination antenna will have any of the following antenna elements when equipped with OnStar®:

- Primary cellular element
- Secondary cellular element
- GPS element
- Digital radio element
- AM/FM element

The OnStar® Telematics Communication Platform (TCP) system uses 2 cellular antenna elements to send and receive cellular data, the primary cellular element and the secondary cellular element. The primary cellular signal is carried by a coax cable that connects the antenna directly to the TCM. Details of the secondary cellular signal are further described below.

The GPS antenna element is used to collect the signals of the orbiting GPS satellites. GPS signals are output from the TCM on Ethernet or CAN 5. Other modules on Ethernet may use the GPS latitude, longitude and satellite time data broadcast by the TCM. Using positioning information from the vehicle Ethernet avoids the use of a coaxial signal splitter to pass the analog GPS signal to other modules. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. Also housed within the antenna is circuitry to combine the GPS signal and the secondary cellular signal. The combination GPS/secondary cellular signal is carried by a coax cable that connects directly to the TCM. The cable also provides a path for DC current for powering the antenna.

Compass Heading

The TCM has a compass feature to calculate vehicle direction which is displayed via the instrument panel cluster or designated display. The compass heading is determined by dead reckoning until the GPS 3rd fix is established. The dead reckoning is accomplished by using the yaw rate sensors and wheel ticks to determine heading changes from a GPS known heading. The GPS 3rd fix heading is determined by the deferential of two locations.

Bluetooth®

With the OnStar® TCP system, Bluetooth® resides in the radio. Refer to Radio/Audio System Description and Operation for further details.

Phantom Phone Calls

A customer may report that the OnStar® system is attempting and/or completing phone calls which the operator of the vehicle did not initiate.

It is important to know which type of reported phantom phone call the operator is reporting. Some phone calls of this nature are considered normal and cannot be addressed other than through education, while others may require some remedial action to resolve. When attempting resolve, it is very important to determine under which circumstances the reported Phantom Phone Call resulted.

The following are different scenarios:

- The vehicle may receive an incoming call just like any other phone. Typically the customer will hear the phone ringing in the vehicle. This scenario also includes incoming Bluetooth® calls.
- Because the button assembly and associated wiring feeds voltage back to the OnStar® system based on the amount of voltage drop through each of the buttons, should the return line be partially shorted to voltage, the system could interpret this voltage as a key press. If one of the buttons voltage is simulated, such as the Blue button, the system will make a phone call just as if the button had been pressed by the operator of the vehicle. Refer to the OnStar® Button Malfunction document for diagnostics.
- Internal module fault. Some customers may report a condition where ″Phone Unavailable″ message is heard after the vehicle door is opened or key is cycled. The technician may find a DTC stored in the Telematic Control Module (example: U1500 or B1000). Refer to diagnostics for the DTC making sure to follow any applicable Bulletins or PIs.
- Unwanted Hands free calling activation. A customer may report that the ″Ready!″ or ″OnStar® Ready!″ message is heard while driving. The customer may also advise that this seems to happen mostly while making a turn. In some cases it has been found that the customer is inadvertently pressing the ″push to talk″ button on the steering wheel controls. On rare occasions, other issues in the steering column or Steering Wheel Control system may induce this event.

The majority of reported Phantom Phone Calls can be attributed to accidental button presses or customer induced concern. In some cases an incoming call may be mistaken as a phantom call concern. It is important to verify all aspects of the customer concern in order to properly duplicate and diagnose the condition. If the concern points to normal operation and customer induced concern, please communicate to the customer this condition is a normal operating characteristic of their vehicle.

Back-up Battery

In some vehicles, the telematics system is equipped with a Back-Up Battery (BUB) installed inside the TCM. This battery is a single-cell lithium-ion rechargeable battery assembly, connected with a short electrical harness, to the circuit board in the module. Contained within this single-cell battery package are a temperature-sensing thermistor, automatic-resetting circuit-overload protection, and a low-pressure vent valve. Nominal voltage of the battery pack is 3.0 - 3.4 volts.

The BUB is only switched into service when the telematics system is in normal On condition, Ignition » On / Vehicle » In Service Mode and main vehicle battery power (B+) at the TCM suddenly becomes near-zero. At this time BUB power is connected to the main circuit board power using solid-state power switching circuits. After initiating BUB for module power, the CAN 5 bus is monitored for a message confirming a collision-event, or near-collision event, has occurred. If a confirmation message is received, the TCM continues to use BUB as the power supply until it is depleted. If a confirmation message is not received within 10 seconds, the BUB power circuits are internally disconnected, preventing inadvertent dis-charge of the battery.

Charging circuitry within the TCM maintains the state of charge. The BUB charging occurs as determined by the module software, primarily based on temperature and state of charge. Battery state of charge is measured by the telematics module circuitry, and remaining energy capacity calculated by the module software. On-board diagnostic tests check for circuit faults, over-temperature conditions, and low-energy capacity. Current DTCs will set for each of these conditions. No component checks are required, and are not recommended, for BUB diagnosis.

WiFi Support

The TCM supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The radio acts as the central WiFi router and connects hardwire Ethernet to the TCM. The TCM completes the connection to the internet through the cellular network. It has the ability to connect up to 7 devices at one time.

Audio System Interface

When the OnStar® requires audio output, a serial data message is sent to the audio system to mute all radio functions and transmit OnStar® originated audio. The OnStar® audio is transmitted to the vehicle audio system by the Ethernet and CAN 5 circuits.

The audio system will mute and an audible ring will be heard though the speakers if the vehicle receives a call with the radio ON.

On some vehicles, the HVAC blower speed may be reduced when the OnStar® system is active to aid in reducing interior noise. When the system is no longer active, the blower speed will return to its previous setting.

OnStar® Sleep Cycle

The OnStar® system uses a unique sleep cycle to allow the system to receive cellular calls while the vehicle is OFF and retained accessory power mode has ended. This cycle enables the TCM to perform remote functions, such as door unlock, as commanded over the air by the OnStar® Call Center, and to continue to maintain an acceptable level of battery electrical drain.

The OnStar® system uses 4 states of readiness, depending upon the type of cellular market the vehicle is in when the vehicle is Off:

- High power
- Low power
- Sleep
- Digital standby

The high power state is in effect whenever the vehicle is ON or in PROPULSION MODE, or retained accessory power is enabled, and the OnStar® system is sending or receiving calls or when the system is performing a remote function.

The low power state is in effect when the OnStar® system is idle with the vehicle is Ignition » On / Vehicle » In Service Mode, or with retained accessory power enabled.

The digital standby power state is entered after the vehicle has been shut off and the retained accessory power has timed out while in a digital cellular area. When in digital standby mode, the OnStar® module is able to perform all remote functions as commanded by an OnStar® advisor at any time, for a continuous 120 hours. After 120 hours, the OnStar® module will go into sleep mode until a wake up signal from the vehicle is seen by the TCM. If the OnStar® module loses the digital cellular signal it will revert to analog mode and follow the standard sleep state (9 minutes OFF, 1 minute standby) based on the time of the GPS signals, this will continue until a digital cellular signal is again received.

If the OnStar® system loses battery power while the system is in a standby or sleep mode, the system will remain OFF until battery power is restored and the vehicle is Ignition » On / Vehicle » In Service Mode.

Features

OnStar® Personal Calling

The hands free, OnStar® personal calling cellular phone feature is an additional feature of the OnStar® system. This feature is embedded within the TCM; however it must be activated by an OnStar® advisor. OnStar® personal calling operates similar to most hand held cellular phones in that the availability for its usage is based on minutes or units. The customer must have a current OnStar® subscription, as this feature cannot be utilized without it. To use OnStar® personal calling, the customer must also purchase units (minutes) as outlined in the owners guide provided with the OnStar® system. Units begin to deplete, 1 unit is equal to 1 minute, as the customer makes outbound phone calls, answers inbound phone calls, or while connected to the OnStar® virtual advisor. In addition, units may also have an expiration date, depending upon the type of units purchased.

Turn by Turn Navigation (if equipped)

Turn by Turn Navigation allows the driver to contact OnStar® to obtain directions for driving from a current location to a desired location. The Turn by Turn Navigation system stores your planned route and continually checks your position along that route, when you deviate from the planned route, the system will recognize this and prompt the driver with verbal prompts for how to proceed. .

Teletypewriter (TTY) Users

OnStar® has the ability to communicate to deaf, hard-of-hearing, or speech-impaired customers while in the vehicle. The available dealer-installed TTY system can provide in-vehicle access to all of the OnStar® services, except Virtual Advisor and OnStar® Turn-by-Turn Navigation.

Deactivated OnStar® Accounts

In the event a customer has not renewed their OnStar® account after expiration or the account was never activated, OnStar® will make a discrete cellular call to the vehicle to deactivate the OnStar® system. Before taking this action, customers are notified that the OnStar® system in their vehicle will be deactivated unless they elect to renew the account. After the OnStar® account has been deactivated, customers will experience the following:

- The OnStar® status LED will not illuminate.
- The OnStar® system will NOT attempt to connect to the OnStar® Call Center in the event of a collision or if the vehicle's front air bags deploy for any other reason.
- An emergency button press will play a demo message indicating the service has been deactivated.
- An OnStar® Call Center button press will connect the customer with a dedicated sales team who can sell an OnStar® subscription and reactivate the vehicle. Depending on the type of OnStar® hardware in the vehicle, the customer may first hear a demonstration message stating there is no current OnStar® subscription for the vehicle, and directing the customer what to do to activate services.
- OnStar® personal calling will not be available, as this feature requires the customer to have a current OnStar® account. Attempts to use this feature may result in cellular connection failure messages and the inability to connect to the number dialed.

Certain vehicles that have never had an active OnStar® account, or that have been deactivated, may be unable to establish a connection with the OnStar® Call Center. When normal published diagnostic procedures do not indicate a possible cause for the no connect concern, the vehicle may have been deactivated. For deactivated vehicles, a no connect response should be considered normal operation. Further diagnosis and subsequent repair is only necessary should the customer elect to become an active OnStar® subscriber or renew the account subscription.

OnStar® Cellular, GPS, and Diagnostic Limitations

The proper operation of the OnStar® System is dependent on several elements outside the components integrated into the vehicle. These include the National Cellular Network Infrastructure, the cellular telephone carriers within the network, and the GPS.

The cellular operation of the OnStar® system may be inhibited by factors such as the users range from an analog or digital cellular tower, the state of the cellular carrier’s equipment, and the location where the call is placed. Making an OnStar® key press in areas that lack sufficient cellular coverage or have a temporary equipment failure will result in either the inability of a call to complete with a data transfer or the complete inability to connect to the OnStar® Call Center. The OnStar® system may also experience connection issues if the identification numbers for the module, station identification number, electronic serial number or manufacturers electronic ID, are not recognized by the cellular carriers local signal receiving towers.

The satellites that orbit earth providing the OnStar® system with GPS data have almost no failures associated with them. In the event of a no GPS concern, the failure will likely lie with the inability of the system to gain GPS signals because of its location, i.e. in a parking structure, hardware failure, or being mistaken with an OnStar® call which has reached the Call Center without vehicle data.

During diagnostic testing of the OnStar® system, the technician should ensure the vehicle is located in an area that has a clear unobstructed view of the open sky, and preferably, an area where analog or digital cellular calls have been successfully placed. These areas can be found by successfully making an OnStar® keypress in a known good OnStar® equipped vehicle and confirming success with the OnStar® Call Center advisor. Such places can be used as a permanent reference for future OnStar® testing.

Mobile Identification Number and Mobile Directory Number

The TCM utilizes 2 numbers for cellular device identification, call routing and connection, a mobile identification number and a mobile directory number. The mobile identification number represents the number used by the cellular carrier for call routing purposes while the mobile directory number represents the number dialed to reach the cellular device.

Firmware Over The Air

The Firmware Over The Air feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar® account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar® terms and conditions, and must have an active OnStar® account to receive any Over The Air programming or updates.

Note: A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

Note: Cold temperatures can cause the update to fail. Warm vehicle’s interior to fix this issue.

Note: Low battery can cause the update to fail. Have battery charged before running update.

Note: Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

Radio/Audio System Description and Operation

The entertainment system on this vehicle may have several different configurations available to it. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

Each item in the list below represents topics covered in detail below.

- Demo Mode
- Data Communications
- Remote Radio Receiver
- Speaker Operation
- Antenna System
- Radio Reception
- Active Noise Cancellation/Auto Volume Control (If equipped)
- Microphones
- Bluetooth ® (if equipped)
- WiFi
- Back Office Registration
- Applications (if equipped)
- Speech Recognition
- Navigation System Components and Features (if equipped)
- Locations Services
- Valet Mode
- Teen Driver
- Theft Deterrent
- Audio Amplifier (if equipped)
- Infotainment Controls and Display
- Steering Wheel Controls (If equipped)
- USB port
- OnStar ®
- OTA (Over The Air) Programming
- GAS (Google Automotive Services) if equipped
- Compass Data
- Media Disc Player (if equipped)
- Digital Rearview Camera (if equipped)
- Immersive Audio – Dolby Atmos (if equipped)

Demo Mode

The radio on new unsold vehicles received at the dealer will be in Demo Mode. In Demo Mode a phone will only stay paired for the current key cycle and lose pairing to the radio after the vehicle shuts down and restarted after 10 min. Additional operational characteristics of Demo Mode include no retention of the following:

- Stored favorites
- Last station tuned
- Bluetooth synced devices
- Volume level
- Last app or screen view
- Audio/equalizer settings

Note: If a device was originally paired while in Demo Mode, a similar condition could occur that randomly continues to drop Bluetooth pairing after exiting Demo Mode. If the vehicle is not in Demo Mode, but it is believed the device was originally paired while in Demo Mode, then delete the device from the radio, delete the radio from the device, and perform the pairing process again.

Loss of functionality on the above items may be due to the design intent of the vehicle while in Demo Mode, no correction is needed for these conditions. This is the normal operating characteristic of the Demo Mode of the vehicle. Once the vehicle is sold, select the option labeled “Not a Demo Vehicle” to exit Demo Mode.

Data Communications

The infotainment system communicates with other devices on multiple serial data networks during operation.

Ethernet AVB

At the core of the infotainment system is the Radio Ethernet AVB (Audio Video Bridging) switch, which communicates directly to each contributing Infotainment module terminator. The Ethernet harness consists of twisted pair wires from point to point. Each module on the Ethernet infotainment system sends/ receives data at 100 megabit per second (Mbps) to/ from a specified port at the Radio. Some system configurations support a 1 Gigabit per second (Gbps) connection at the Radio to/from the TCP (Telematics) module. The Radio/Ethernet will also be used to program USB S/W update files to the modules connected to the Ethernet ports. Some of the data services performed over Ethernet AVB include: Chime, Service Programming via Over-The-Air updates, OnStar Turn-by-Turn directions and all other OnStar data services.

Local Interconnect Network (LIN)

The Local Interconnect Network (LIN) Bus is a single wire communication system. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality.

The Remote Radio Receiver, Information Display, Infotainment Controls and the Multifunction (tunnel) Controls all communicate on the LIN bus.

Controller Area Network (CAN)

The Radio will communicate with other modules and systems in the vehicle via CAN and CAN5. Diagnostic Trouble Codes will be read on CAN/CAN5 to diagnose Ethernet, LIN and system faults. CAN will also be used for programming calibrations using Tech Line Connect (TLC)/SPS. CAN takes the place of GMLAN on Global-B architecture systems. CAN5 is a sub-system of the entire CAN network on a vehicle and is the specific network that connects the Infotainment modules on the vehicle.

For additional information refer to *Data Link Communications Description and Operation 7-22*

Automotive Audio Bus (A2B)

The Automotive Audio Bus (A2B) uses a radio and one or more nodes. It is a private, digital, and high speed serial bus. The system contains a master (radio) and one or more nodes connected by an unshielded twisted pair (UTP) wiring harness. Diagnostic Trouble Codes (DTCs) are set within the master node for all errors in the system, if the bus is up and communicating. The system operates on full duplex, where communication is possible over a single wire if the other wire is damaged or open. The network is daisy chained. A and B ports are isolated by the A2B transceiver. The A2B bus line doesn’t require any terminator. The last device is configured as end node by the A2B master processor during the network discovery process.

Remote Radio Receiver

Overview

The Radio is the Ethernet master. The radio also communicates with other components and systems within the vehicle via CAN/CAN5 and LIN. The remote radio receiver communicates with the info display module via the LIN bus for control information, touch communications and dimming level. Digital video data is sent to the display through a dedicated video cable.

The Radio receiver contains internal antennas for Bluetooth ® and WiFi. The Radio also has an external WiFi antenna (on applicable systems) that is used to receive local WiFi signals at increased distances. This is mainly used to support Over-the-Air updates.The Radio must be mounted properly to obtain proper wireless signals and GPS position. The remote radio receiver is responsible for receiving all broadcast audio bands. Broadcast signals from AM, FM, XM and DAB bands are transmitted to the radio via the vehicle antenna systems. The remote radio receiver is also responsible for the following: Video for the infotainment display, Bluetooth ®, USB, memory card reader, and speech recognition functions.

The Radio has phone projection capabilities that can transmits information directly to the vehicle infotainment system through Bluetooth or a USB connection. Downloadable applications will be available based on distracted driver safety requirements.

Radio Power

The radio receives battery power and ground from the vehicle harness.

The radio does not use a discrete ignition feed circuit for power moding. The power mode master provides the system power mode to the radio via serial data messages. The power mode master determines the system power mode by processing power mode information from ignition switch inputs. Serial data power modes supported by the radio are OFF, ACCESSORY, RUN, and CRANK REQUEST.

The radio can be turned ON with the ignition OFF. After 10 minutes of inactivity the radio will power down. If any setting (e.g. changing the station) or volume has been changed or if the radio has been powered OFF then back ON the 10 minute timer will reset from that point.

Radio Audio Outputs
When not equipped with an amplifier, the radio outputs all audio signals to the speakers via the vehicle wiring harness.

When equipped with an amplifier, the radio outputs all audio signals digitally over Ethernet.

Speaker Operation

Speakers turn electrical energy into mechanical energy to move air, using a permanent magnet and an electromagnet. The electromagnet is energized when the radio or amplifier (if equipped) delivers current to the voice coil on the speaker. The voice coil will form a north and south pole that will cause the voice coil and the speaker cone to move in relation to the permanent magnet. The current delivered to the speaker is rapidly changing alternating current (A/C). This causes the speaker cone to move in two directions producing sound.

Antenna System

Multi-Band Antenna
The multi-band antenna is located on the roof of the vehicle. This type of antenna may be used with the AM/FM radio, but is primarily for cellular, GPS signals, and XM, if the vehicle has these features. Keep this antenna clear of snow and ice for clear reception. If the vehicle has a sunroof, the performance of the system may be affected if the sunroof is open. Loading items onto the roof of the vehicle can interfere with the performance of the system, ensure the multi-band antenna is not obstructed.

Diversity Antenna
The diversity antenna system can use up to 2 antenna amplifiers and an AM/FM element that is part of the rear end spoiler assembly or applied as appliqués to the rear glass. With 2 antennas the right antenna 1 receives both AM and FM signals, while the left antenna 2 may receive FM and DAB signals only. The antenna amplifier receives the signals from the rear end spoiler antenna element or from the glass antenna element. Each antenna amplifier is connected to the radio by a coaxial cable.

The radio antenna amplifier is enabled when the radio is turned on. The radio provides battery voltage to the antenna amplifier using the center conductor of the antenna coaxial cable. When a 12 V signal is seen by the amplifier on the center conductor of the antenna coax, the received signals are amplified.

With a 2 antenna amplifier system when the AM band is selected on the radio, the antenna 1 amplifier connects the AM antenna to the radio. When the FM band is selected, both antenna amplifiers provide FM signals to the radio. The radio switches between the two FM antennas, monitoring the signal strength and combines the signals to create one stronger signal.

Global Positioning System (GPS) Antenna
The global positioning system (GPS) antenna is part of the multi-band antenna located on the roof of the vehicle. The GPS antenna is used to collect the signals of the orbiting GPS satellites. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. The GPS antenna amplifier is powered through the coaxial cable.

The GPS antenna is connected to the telematics communication interface control module via a coax cable. The GPS signal is sent to the navigation radio via an Ethernet harness.

External WiFi Antenna
On some system configurations, an external WiFi antenna is connected to the radio to support longer range reception, compared to the internal Wifi antenna. Over-the-air updates is the main feature supported by this antenna. Data transfers used for consumer media will also be supported by this antenna when connected to a local network. The antenna is connected to the radio via coaxial cable.

Radio Reception

AM/FM Radio Signal
The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output (wattage) of the broadcasting station
- The location of the vehicle (or receiver) relative to the broadcast tower.
- Height of the broadcast antenna
- Height of the receiving antenna
- Obstacles between the tower and the receiver
- Atmospheric conditions
- What band (AM or FM) the station is broadcasting
- Type of antenna and the ground plane

Sirius XM (SXM) Digital Radio Receiver (If equipped)
A service fee is required in order to receive the XM service.

The XM satellite receiver is integrated into the radio. XM satellite radio provides digital radio reception. The XM signal is broadcast from two satellites and, where necessary, terrestrial repeaters. The high power satellites allow the antenna to receive the XM signal even when foliage and other partial obstructions block the antennas view of the satellite. Terrestrial repeaters are used in dense urban areas. These repeaters will receive the satellite signal and re-broadcast them at much higher power levels in order to ensure reception in areas with densely packed tall buildings. Even with repeaters the signal can be compromised resulting in loss of XM.

SiriusXM 360L
SiriusXM with 360L interface has enhanced in-vehicle listening experience for subscribers. The experience now offers more categories and system learned recommendations toward discovering more personalized content.

To use the full SiriusXM 360L program, including streaming content and listening recommendations, OnStar Connected Access is required. Connected vehicle services vary by model and require a complete working electrical system, cell reception, and GPS signal. An active OnStar connected plan is required, if the customer declines OnStar Terms and Conditions the following message can be displayed: Connection Unavailable, Please call OnStar Agent.

Reference the SiriusXM user guide for use and subscription information.

SiriusXM Tune Start
SiriusXM Tune Start is a feature that begins playing the current song from the beginning when you tune to a SiriusXM music channel in the stored Favorites. This feature can be enabled/disabled through the radio Settings menu.

When equipped, Tune Start works with most SiriusXM music channels when the channel has been saved as a Favorite in the radio. The SiriusXM app in the radio also has a list of Favorites. Saving a SiriusXM music channel as a Favorite automatically saves it in the hidden SiriusXM Favorites list. If a SiriusXM music channel is not working in Tune Start ensure the channel exists in the SiriusXM Favorites list. SiriusXM Favorites can be found in the SiriusXM Settings menu under Listener Options. Note that SiriusXM channels stored by default in new vehicles are not stored in the SiriusXM Favorites list. These channels would need to be stored as Favorites by the user for them to appear in the Sirius XM Favorites list. The radio may require a sleep cycle before Tune Start will begin to function on newly saved Favorites. Tune Start will only begin to record SiriusXM Favorites with the Ignition On, so some buffering time is required before Tune Start can function after the vehicle is started.

Tune Start is a SiriusXM feature. Reference the SiriusXM user guide, or contact SiriusXM for use and subscription information.

High Definition (HD) Radio (If equipped with RPO U2L)
HD Radio delivers subscription free local broadcasting in a digital format which may include song title, artist name, album art, weather, traffic data, etc., on AM/FM bands. Up to four stations could be available on a single frequency for e.g. if radio station is 96.9 FM, the HD enabled radio would have additional broadcasts on 96.9 HD1, HD2, HD3 and HD4. The digital technology allows for clear reception quality and additional information.

Active Noise Cancellation/Auto Volume Control (If equipped)

Active Noise Cancellation (or sometimes referred to as Auto Volume Control) may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

The main components of the Active Noise Cancellation system are:

- Microphones in the vehicle headliner. Use schematics to determine the number of microphones in each vehicle.
- An engine speed (RPM) signal from the engine control module to the amplifier/active noise cancellation module/radio.
- Active Noise Cancellation electronics and software integrated into the audio amplifier/active noise cancellation module/radio.
- The vehicle speaker system, connected to the amplifier/active noise cancellation module/radio, to output the desired cancellation frequencies.

The Active Noise Cancellation system is operational under the following conditions:

- The amplifier/active noise cancellation module/radio has passed all self diagnostic checks.
- All doors are closed.
- Battery voltage is between 9.5 V and 16 V.
- The vehicle cabin temperature is less than 140°F (60°C).
- For internal combustion engines- Engine speed is between 550 and 3000 RPM

The Active Noise Cancellation/Auto Volume Control system is a method used to reduce the perception of certain undesirable sounds generated by the engine into the vehicle cabin. The system uses microphone and engine speed signals, software integrated into the amplifier/active noise cancellation module/radio, and the vehicle speakers to determine and generate the correct frequencies needed to achieve the desired reduction.

The microphones are located in the headliner to monitor noise/sounds in the vehicle cabin, and are directly connected to the amplifier/active noise cancellation module/radio. For internal combustion engines the amplifier/active noise cancellation module/radio also receives an engine speed (RPM) signal from the engine control module. The amplifier/active noise cancellation module/radio processes these inputs to determine the frequency of the undesirable sound. The amplifier/active noise cancellation module/radio then calculates the appropriate cancellation frequency and outputs a cancellation signal (audio tone) to the vehicle speakers to reduce the perception of undesirable sounds by the vehicle occupants so the vehicle cabin appears quieter and without vibration.

Microphones

There are two different microphone systems depending on the vehicle. The first system is the traditional analog two wire discrete circuits wired directly to the OnStar module or the radio depending on options. The second system uses microphone arrays and amplifier referred to as nodes that operate in tandem. The system typically uses six circuits also utilizing the two wire discrete analog circuits along with input and output of the Automotive Audio Bus (A2B) Serial Data 1 digital circuits.

First Microphone System

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Control Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Control Module. Without OnStar the primary microphone is connected directly to the radio. The secondary microphone is always connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. The secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Control Module. During a normal (non-emergency) OnStar call the Telematics Control Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Control Module via the Ethernet connection. During an emergency button call the Telematics Control Module contacts the OnStar call center directly and does not send the signal to the radio.

Second Microphone System

The microphone array system uses a master which is the radio and any number of microphones or amplifiers referred to as nodes. The nodes are connected to the master via the Automotive Audio Bus (A2B) Serial Data 1 circuits. The microphone array system also utilizes the traditional 2 wire analog discrete signal circuits wired to the OnStar module or the radio. These analog circuits are only used as a backup for emergency OnStar calls if the A2B 1 is down. The primary microphone uses a digital signal operating on the A2B serial data 1 circuits. The nodes will have a + and – A2B 1 input and a + and – A2B 1 output, except for the end node which only has a + and – A2B 1 input.

Bluetooth ® (If equipped)

Bluetooth ® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The first connection between devices is established through a process called pairing. In order to pair two devices, a password (passkey) has to be exchanged between the two devices. One device will generate the password, the other device accepts the password to complete the process. Once the devices are paired, future connections between the devices will occur automatically when the devices are on and within range of each other.

The Bluetooth ® hardware is internal to the Remote Radio Receiver. The antenna is internal to the Remote Radio Receiver. The Remote Radio Receiver supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The Remote Radio Receiver is also capable of interfacing with cellular phones for hands-free features.

- The device must be paired to the system to use the available Bluetooth ® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- Depending on model year up to 10 devices can be paired, refer to owners manual for details.
- Streaming Audio allows playing music from the mobile device wirelessly. Music stored on the mobile device can be viewed and controlled from the display.
- To stream audio from a mobile device, the device must be unlocked, and any additional applications should be closed.

Refer to the owners manual, supplements, and the device manufacturers information for pairing instructions.

WiFi

The WiFi hardware is internal to the Remote Radio Receiver. The WiFi or WLAN antenna is called the Wireless Communication Antenna which is connected to the Remote Radio Receiver. WiFi expands the abilities of the vehicle as described below:

- Connect to home WiFi to update software.
- When used with OnStar 4G LTE HotSpot service, it provides internet access to devices in the vehicle when connected to the HotSpot. This requires the purchase of OnStar WiFi data plan.
- Enables in-vehicle networking between passengers' devices, like home WiFi network.
- Allows remote access to external connected device application data for vehicle internet application use.

Back Office Registration

The Radio must be registered with the GM Back Office in order to receive downloaded information such as approved applications, module software updates, weather and traffic information for current location. The vehicle must have a Cellular or WiFi connection to complete the initial registration process. This process will verify the assembly plant factory feed data from the BCM, CGM and Radio serial numbers to the VIN and if the security checks are met, then the user must complete the registration process by entering email and required personal information. The registration status can be verified through the Radio "Setting – About selection.

When any of these secured ECU's are replaced, a new serial number will be recorded during the service calibration process and appended to the vehicles history data for uninterrupted back office connection.

If the Radio is replaced, the user can recover settings/applications by reregistering the email account. During the initial registration process the user will enter an email/password. The user will then be sent a follow up verification email link to setup the account completely. If the complete account setup is not performed the password reset security questions will not be entered, which will prevent reregistering this email account in the future if the password is forgotten. The radio will operate in Demo Mode or as Guest until a user profile has been set up.

Applications (If equipped)

Note: For vehicles equipped with Google Automotive Services (GAS) refer to that section below.

When the system is equipped with Bluetooth ® or WiFI, the system is capable of using applications, commonly referred to as apps.

The term application refers to any piece of software that works on a system (hardware) that is being operated by it's own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The device must be connected to the system. this may be done wirelessly via Bluetooth ®, WiFi, or via the vehicle USB port. Refer to the device manufacturers information for the proper connection method.
- When the device is connected, the vehicle infotainment system is used to remotely access and control the application on the mobile device.

- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Using applications will use the device’s data plan.
- The device must be unlocked, and any additional applications should be closed.

Refer to the owners manual and supplements for information on mobile devices, control, and operation.

Speech Recognition

The Speech Recognition feature is implemented only in a Mid/High System Radio- CSM module. There is no Speech Recognition in a Low System. Speech Recognition allows the user to command various features of the radio via voice commands. For addition information refer to the owners manual. For model year 2018 (and forward) Mid/High systems, part of the speech recognition functionality is controlled via off-board cloud connection. A speech icon in the radio allows user to see if an utterance has been received by the off-board cloud. Points-of-interest (POIs) data are also stored off-board. Any disruption in the connection to the cloud will cause a partial loss of functionality for these systems.

For model year 2018 (and forward) there will also be a new speech recognition feature called Barge-in. This allows the user to speak over the voice prompts generated by the system. This feature is turned off by default from the factory and must be enabled by the user.

Navigation System Components and Features (if equipped)

There navigation system uses the Google Maps app which is a subscription based service (depending on available options).

The navigation system provides the following:

- A global positioning system (GPS) signal, which provides the vehicle location information.
- Map data for navigation and map route guidance.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).

GPS signals are an output from the telematics communication interface control module on Ethernet. Other modules on Ethernet, such as the radio may use the GPS latitude, longitude and satellite time data broadcast by the telematics communication interface control module.

Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The remote radio receiver uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

Points of Interest

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

Locations Services

“Locations Services Off” also referred to as Location Masking, is a feature in select 2019 and beyond Infotainment 3 systems that allows customers to enable or disable location services in their vehicle. This allows customers to control what data is being sent from their vehicle, and has important implications for other connected services.

The default setting is “Locations Services On”, however, customers can enable or disable Locations Masking in two ways:

1. Press and hold the white button next to the blue OnStar® button in the overhead console.
2. In the Setting menu, select System>Privacy>Location Services>ON or OFF.

- Look for the white LOCATIONS SERVICES icon in the status bar on the Home Screen, next to the clock and outside temperature in the lower right corner of the screen.
- When Locations Services are On, there will be no circle around the icon.
- When the Locations Services are Off, the icon will be circled in red.

Certain functions that require the vehicle’s location may not operate properly when Location Services are Off, including:

- Connected Navigation services, if equipped and active, will not work (the system will operate as a non-connected Navigation system).
- Speech recognition may not offer full functionality.

- OnStar advisors will be unable to provide Turn-by-Turn Navigation services.
- Customers may receive error messages in their myChevrolet, myBuick, myGMC, or myCadillac mobile app when trying to use Vehicle Locate.
- Some features of Smart Driver may be inoperable or not work properly, including the score being replaced by dashes.

Note: Emergency services, such as Automatic Crash Notification and Stolen Vehicle Assistance, are NOT impacted by Location Masking.

Valet Mode (If equipped)

Valet Mode is a customer enabled feature of the infotainment system, found in the settings menu, if equipped. The customer creates and inputs a four digit code using the infotainment controls. Confirming the code and selecting LOCK will lock the infotainment system, steering wheel controls and other vehicle features, dependent on vehicle equipment. The vehicle will remain in valet mode until the same four digit code is re-entered.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

Teen Driver

The teen driver feature puts the vehicle into a mode that can only be unlocked with a valid PIN. It allows various restrictive features for safer driving. Some of the features include Speed Limiter, Speed Warning, Register Key, Report Card, etc. For additional information refer to owners manual.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

Theft Deterrent

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. The radio receives this information via serial data. A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

The radio has the following theft operating modes as part of the theft deterrent system:

- Normal Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data matches the learned VIN sequence. In this mode the radio has full functionality.
- No VIN Mode: The radio has not received or learned a correct VIN sequence. In this mode the radio has limited functionality.
- Theft Detected Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence. In this mode the radio may be disabled or have limited functionality. The radio display will indicate that theft protection is active.

Audio Amplifier (If equipped)

Amplifier Interface

A fused battery voltage circuit provides the main amplifier power. The audio amplifier (when equipped) is a participant on the Ethernet bus. The audio amplifier receives audio signals and control information from the Radio. The Amplifier receives battery power and ground from the vehicle harness.

Amplifier Operation

The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The audio amplifier amplifies the signal and sends it to the appropriate speakers.

Each of the audio output channel circuits (+) and (−), at the audio amplifier have a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

The audio amplifier is also responsible for operation of active noise cancellation if equipped. Refer to Active Noise Cancellation Description and Operation for more information.

Audio Exterior – Vehicle Exterior Sound (RPO NVS), The Vehicle Exterior Sound system is an audio system designed to produce sound on the exterior of the vehicle. The VES system includes two exterior speakers, one front and one rear and an A2B auxiliary amplifier. The VES system receives audio signals from the radio.

Infotainment Controls and Display

The infotainment display and controls are a separate component from the radio, combined into an assembly. The assembly contains the control knobs and buttons for all audio and HVAC functions and the information display. The assembly is supplied battery voltage and ground from the vehicle harness.

Control information, touch communications and dimming level for the display are communicated via a Low Speed serial data circuit or LVDS cable to the Radio.

The remote radio receiver sends the display digital video data for on-screen display through a dedicated video cable.

The information display provides a feedback on the touch screen and certain controls.

The controls communicate via a Low Speed serial data circuit or LVDS cable with the remote radio receiver. Messages communicated include the following:

- Wake-up/power state messages
- Diagnostic information
- Button presses/knob rotations
- Commands for the state of indicators
- Back-lighting dimming level

Steering Wheel Controls (If equipped)

Some audio functions are available using the steering wheel controls. The steering wheel controls duplicate the function of the primary controls available on the radio.

For additional information on steering wheel controls, refer to Steering Wheel Controls Description and Operation.

USB Port

The USB hub device interfaces directly with the remote radio receiver via a standard USB cable. A Mini type USB connector is used to connect the cable at the USB port and at the remote radio receiver and at the auxiliary input receptacle. Standard USB male to female connections are typically used for connecting USB cables together where an in-line connection is required. An in-line cable connection is typically found between the console and I/P harness.

USB Port

The USB port allows connectivity to the infotainment system from portable media players or a USB storage device (memory stick/ flash drive). When a device is connected to the USB port, the device can be controlled from the radio controls.

Not all portable media player devices or file types are compatible. Connection to USB HUB devices is not supported.

Refer to the owner’s manual for information on USB devices, control, and operation.

OnStar ® (If equipped)

When OnStar is activated, a serial data message is sent to the radio that activates default audio settings. The fade will be set to the front, bass and treble are set to the mid range, the outputs are set to mono, when the audio source is OnStar. OnStar takes priority over any other audio source.

For additional OnStar information, refer to OnStar Description and Operation.

Over The Air Programming

The Over The Air Programming feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar terms and conditions, and must have an active OnStar account to receive any Over The Air programming or updates.

Note: A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

Note: Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

GAS (Google Assistant Services) if equipped

Some of the GAS features are:

- Maps – Benchmark maps, navigation, traffic and point of interest data and legal speed limit sign information.
- Assistant – Voice assistant cloud services with vehicle integration (e.g., radio, HVAC).
- Play Store – Access to favorite media streaming apps plus first party GM apps.
- Keyguard – similar to a code to unlock your cell phone. When this feature is enabled a customer created lock (pattern, PIN or password) will need to be entered to unlock the radio at every ignition cycle. When the radio is locked SPS diagnostics will be unavailable. To utilize SPS diagnostics when the radio is locked enter the “Guest Mode” feature.

A connectivity package needs to be purchased to have the full experience. Refer to the Owner Manual for further information on Google Automotive Services.

Compass Data

With the Base Radio the Telematics Control module provides compass and GPS position information on the Info-CAN bus when it is present.

In a Mid / High Radio System configuration without a Telematics Control Module and equipped with GPS, the radio shall provide the GPS and heading information on Info-CAN as shown below.

An external Remote Compass Module (RCM) is required to transmit the heading and position information on Info-CAN if either:

- The Base Radio is present in a system configuration with no Telematics control module.
- The radio variant without GPS is present in a system configuration with no Telematics control module.

Media Disc Player (if equipped)

The Remote Media Player feature sends information through a USB connection to the Rear Seat Infotainment and outputs digital audio/video to vehicle displays and to the Radio over the Ethernet bus. The Rear Seat Infotainment system also has a USB hub with an auxiliary port for digital media file access.

The media disc player receives battery power and ground from the vehicle harness.

Digital Rearview Camera (if equipped)

The digital rearview camera is a direct input to the radio via coaxial cable. Camera and image activation are driven by reverse gear signal from the reverse lamp input. This function is used for reverse guidance. For radio systems that manage the camera signal, the system does not have video bypass module, as this functionality is managed onboard the radio.

Immersive Audio – Dolby Atmos (if equipped)

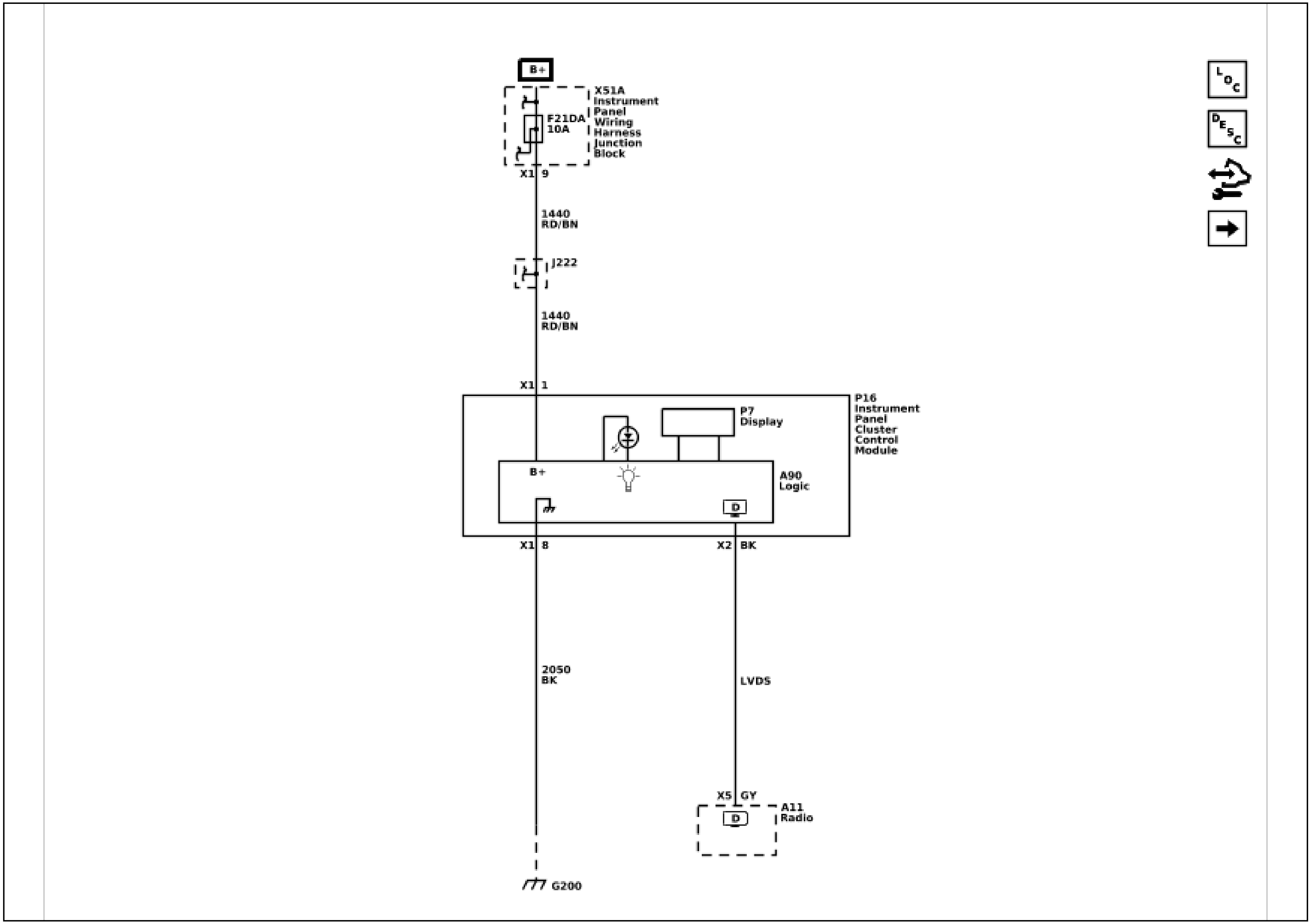
Dolby Atmos is an immersive audio technology that delivers a three-dimensional sounds experience. It makes sound seem to come from all directions, including behind, above and beside. The 7.1.4 system utilizes 7 surround channels, 1 subwoofer, and 4 height channels.

For Dolby Atmos to operate the vehicle may need an OTA update. If an update is available download and install the update first. To confirm Dolby Atmos is installed in the vehicle go to Audio Settings and select Sound. Confirm the Immersive Audio option is present. Verify the vehicle has an active OnStar service plan and a Dolby Atmos compatible streaming service such as TIDAL or Amazon Music Unlimited. The compatible streaming service must be downloaded from the vehicles Google Play Store and not through a cell phone via Bluetooth. In the streaming app look for files with Dolby Atmos labels or badges or search for Dolby Atmos files.

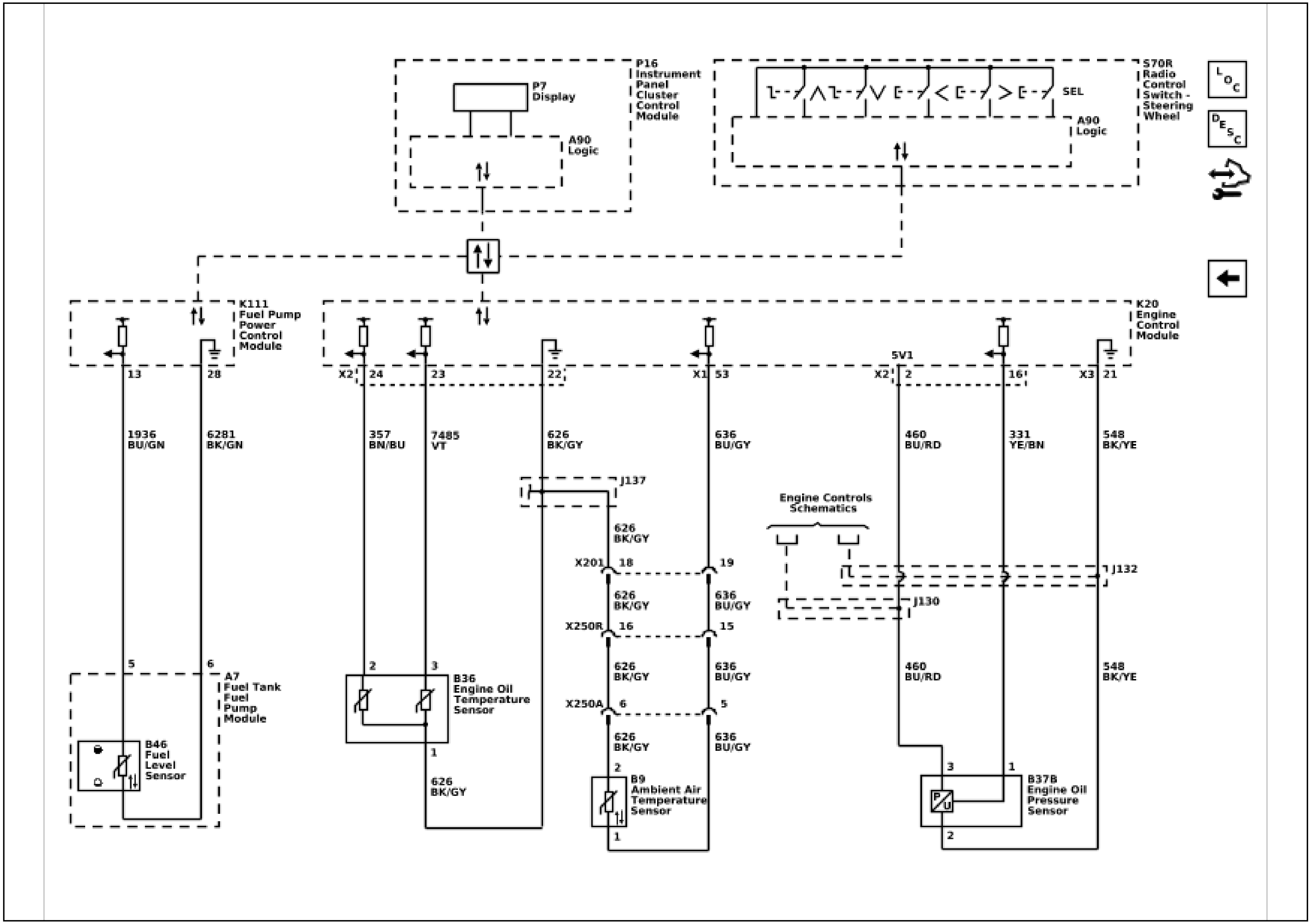
Displays and Gauges

Schematic and Routing Diagrams

Instrument Cluster Schematics (Instrument Cluster)


B+
X51A Instrument Panel Wiring Harness Junction Block
F21DA 10A
X1 9
1440 RD/BN
J222
1440 RD/BN
X1 1
P16 Instrument Panel Cluster Control Module
P7 Display
B+
A90 Logic
D
X1 8
X2 BK
2050 BK
LVDS
X5 GY
D
A11 Radio
G200
6853062

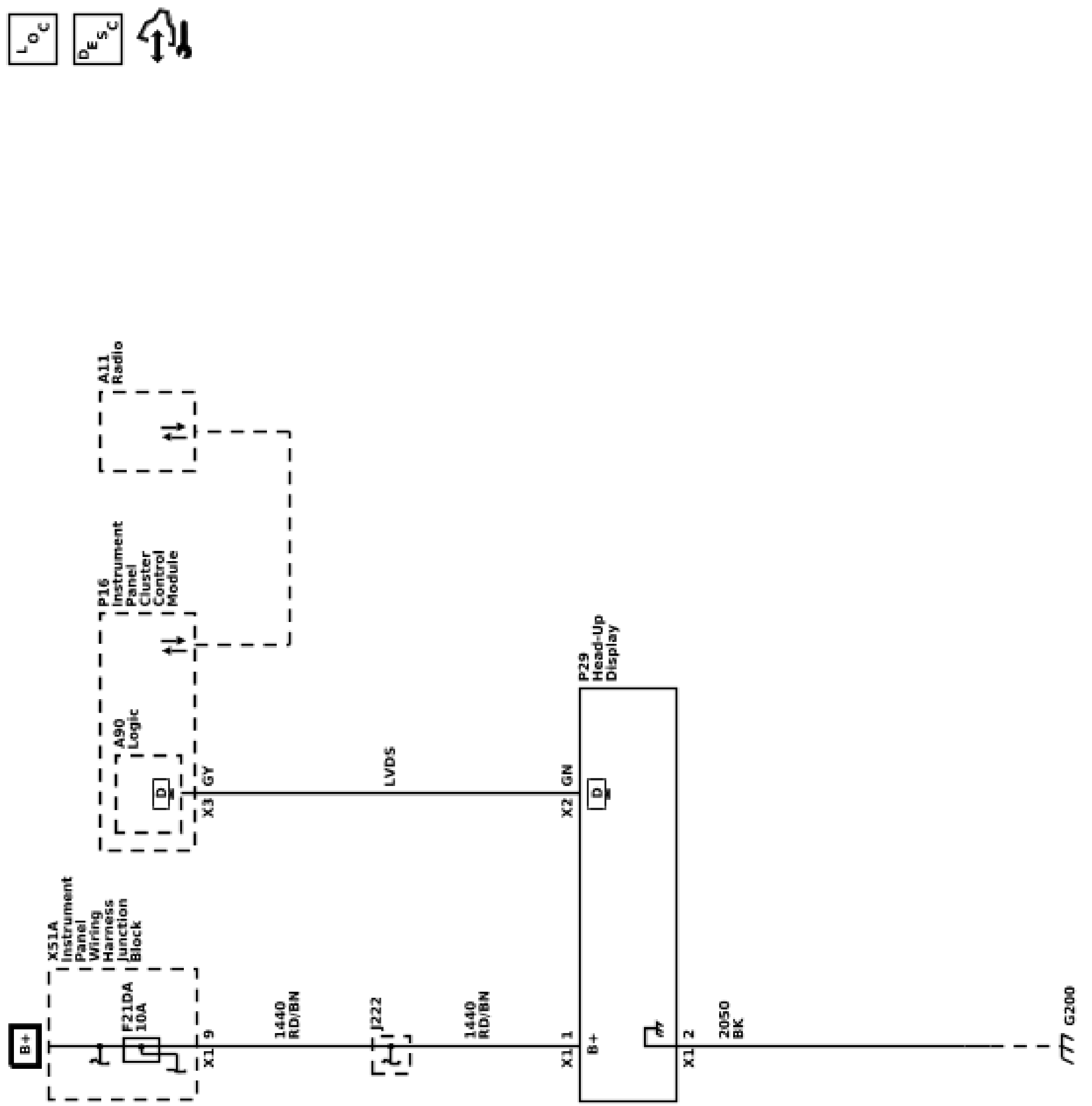
Instrument Cluster Schematics (Gauges)


P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
SEL
A90 Logic
S70R Radio Control Switch - Steering Wheel
K111 Fuel Pump Power Control Module
K20 Engine Control Module
5V1
13
28
X2 24
23
22
X1 53
X2 2
16
X3 21
1936 BU/GN
6281 BK/GN
357 BN/BU
7485 VT
626 BK/GY
636 BU/GY
460 BU/RD
331 YE/BN
548 BK/YE
J137
Engine Controls Schematics
626 BK/GY
X201 18
19
J132
626 BK/GY
636 BU/GY
J130
X250R 16
15
626 BK/GY
636 BU/GY
460 BU/RD
548 BK/YE
X250A 6
5
626 BK/GY
636 BU/GY
5
6
A7 Fuel Tank Fuel Pump Module
2
3
B36 Engine Oil Temperature Sensor
1
626 BK/GY
2
B9 Ambient Air Temperature Sensor
1
3
1
B37B Engine Oil Pressure Sensor
2
B46 Fuel Level Sensor

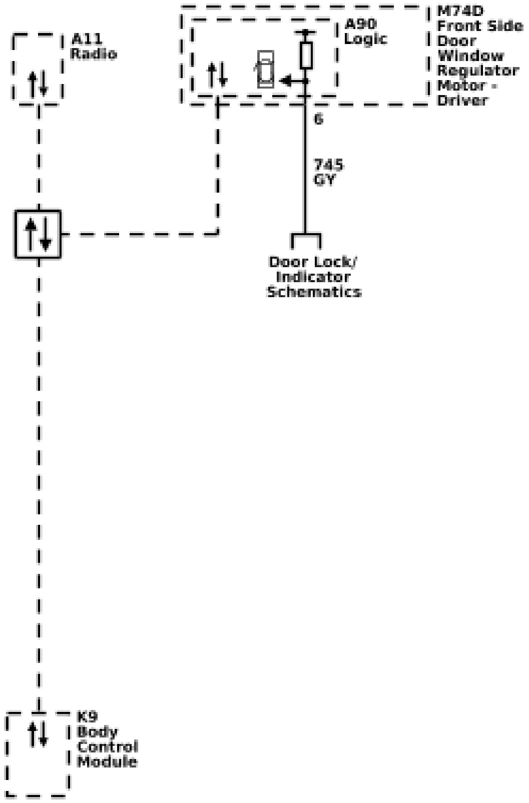
6853063

Head-Up Display Schematics (Head-Up Display (UV6))

6853042


B+
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
F21DA
10A
X1 9
1440
RD/BN
J222
1440
RD/BN
X1 1
B+
X1 2
2050
BK
G200
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
D
X3 GY
LVDS
X2 GN
D
P29
Head-Up
Display
A11
Radio

Audible Warnings Schematics (Audible Warnings)


A11
Radio
A90
Logic
M74D
Front Side
Door
Window
Regulator
Motor -
Driver
6
745
GY
Door Lock/
Indicator
Schematics
K9
Body
Control
Module

6852941

Description and Operation

Audible Warnings Description and Operation

The audible warnings alert the driver of a system concern or a critical vehicle condition. The radio generates the audible warnings through the speakers. The radio receives audible warning requests via the serial data circuit. If the radio receives multiple audible warning requests, the warning with the highest priority sounds first. On vehicles without a radio, a chime module generates the audible warnings and receives audible warning requests via the serial data circuit. Either the radio or the chime module is the chime producer. The following lists the audible warning sounds:

1. Single pulse gong
2. Multiple pulse gong
3. Single pulse beep
4. Multiple pulse beep
5. Click
6. Clack

Auto Stop Mode

The chime producer activates when the vehicle comes to a stop and the driver or passenger door is opened as requested by the body control module.

Fasten Safety Belt Warning

The chime producer activates the fasten safety belt audible warning as requested by the body control module (BCM). The BCM sends a serial data message to the chime producer indicating the chime as a multiple gong. The fasten safety belt warning sounds and the fasten safety belt indicator illuminates when the following occurs:

- The ignition switch transitions to ON.
- The inflatable restraint sensing and diagnostic module (SDM) detects that the drivers seat belt is not buckled and the signal is low. The SDM sends a serial data message to the BCM indicating the seat belt status. The instrument cluster receives a serial data message from the BCM indicating the driver seat belt status.

If the seat belt is buckled when the ignition is turned ON, the chime does not sound. If the seat belt is buckled while the chime is sounding, the chime stops. If the seat belt is unbuckled after the initial transition to ON, the chime does not sound.

Lights On Warning

The chime producer activates the lights on warning as requested by the BCM. The BCM sends a serial data message to the chime producer indicating the chime as a multiple gong. The lights on warning sounds when the following occurs:

- The ignition is OFF.
- The BCM determines that the driver door is open and the signal circuit is low.
- The BCM determines that the headlamp switch is in the park or head position.

Brake Warning

The chime producer activates the brake audible warning as requested by multiple control modules. The BCM, electronic brake control module or the parking brake control module sends a serial data message to the chime producer indicating the chime as a multiple gong. The brake warning sounds and the BRAKE indicator illuminates when the following occurs:

- The ignition is ON.
- The vehicle speed is greater than 8 km/h (4.9 mph). The instrument cluster receives a serial data message from the Battery Energy Control Module indicating the vehicle speed.
- The BCM determines that the parking brake is engaged and the signal circuit is low.
- The brake fluid is low.

Door Ajar Warning

The chime producer activates the door ajar audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer indicating the chime frequency of a medium rate and continuous duration. The door ajar warning sounds and the appropriate door ajar indicator illuminates in the driver information center when the following occurs:

- The BCM determines that a door (driver door, passenger door, left rear door, right rear door) is open and the signal circuit is low. The instrument cluster also receives a serial data message from the BCM indicating the door ajar status.
- The vehicle is not in PARK. The BCM receives a serial data message indicating the gear position.

Object Detection

The chime producer activates the object detection audible warning as requested by the object alarm module. When an object is within the measuring range of the sensor, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the object alarm module. The object alarm module evaluates the received sensor signals. As soon as an object is within the measuring range, the object alarm module sends a message via CAN-Bus to the chime producer in order to give out the acoustic distance signal. The measuring range is between 30–120 cm (11.81–47.24 in). From a distance of 120 cm (47.24 in), the acoustic signal is active. The frequency of the beep sound increases with decreasing distance. From a distance less than 30 cm (11.81 in), the sound becomes continuous.

Additional Warnings

The following warnings have an associated instrument cluster indicator or driver information center message:

- Turn Signal Indicators – The chime producer activates the audible warning as requested by the BCM. The chime produces two different chimes, one when the turn signal turns off and another when the turn signal turns on.
- Vehicle Overspeed Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Fuel Level Low Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Oil Pressure Indicator – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Park Assist Fault Clean Rear Bumper Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Tire Pressure Low Indicator – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.

Refer to *Indicator/Warning Message Description and Operation 4-33*.

Head-Up Display Description and Operation

The head-up display projects an image on the windshield that is viewed from the driver seat. Information that is relevant to what the drive is currently doing is displayed, as well as any safety-critical information as it is happening.

The components of the head-up display are:

- P29 Head-Up Display
- P16 Instrument Panel Cluster Control Module
- A22 Radio Control
- A11 Radio

Head-Up Display

The P29 Head-Up Display is a slave device to the A11 Radio. The P29 Head-Up Display is powered through battery voltage and ground. The A11 Radio communicates Head Up information to the P16 Instrument Panel Cluster Control Module via an LVDS cable. The P16 Instrument Panel Cluster Control Module acts as a pass-through to relay information from the A11 Radio to the P29 Head-Up Display. It communicates directly with P29 Head-Up Display via another LVDS cable

Head-Up Display Operation

When turned on via the infotainment screen, the head-up display projects an image onto the windshield and is only viewable from the driver seat. The image height, brightness, and rotation is adjustable using the infotainment screen.

Depending on vehicle configuration, the Head-Up Display may display the following vehicle information, messages, or alerts:

- Speed
- Audio
- Phone
- Navigation
- Driver Assistance Features
- Vehicle Messages

Indicator/Warning Message Description and Operation

Indicator LIGHT ON

Refer to the owner's manual for the descriptions and explanations of all indicator lights.

For diagnosis and repair information related to an indicator light, refer to the System Diagnosis and the Description of Operation that the message relates to.

Message Displayed

Refer to the owner's manual for descriptions and explanations of all messages displayed.

For diagnosis and repair information related to a displayed message, refer to the System Diagnosis and the Description of Operation that the message relates to.

Transmission Shift Lever Position Indicator

The transmission shift lever position indicator (if equipped) is located on the center console and indicates the current transmission shift lever position. The transmission shift lever position indicator receives power and ground and is controlled by the Body Control Module (BCM) via serial data. The Transmission Control Module/Powertrain Control Module determines transmission shift lever position based on signals from the transmission internal mode switch and sends the shift lever position information to the BCM via serial data.

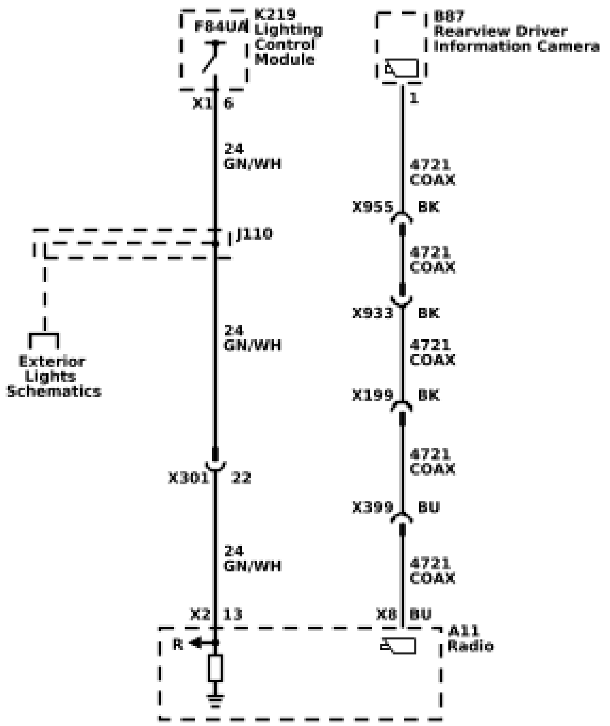
Instrument Cluster Description and Operation

This vehicle does not contain a traditional Instrument Cluster to display vehicle information to the driver. This display is merely a display that is controlled by the A11 Radio. For more information, refer to [Link target (target-id 50968-) not found]

Image Display Cameras

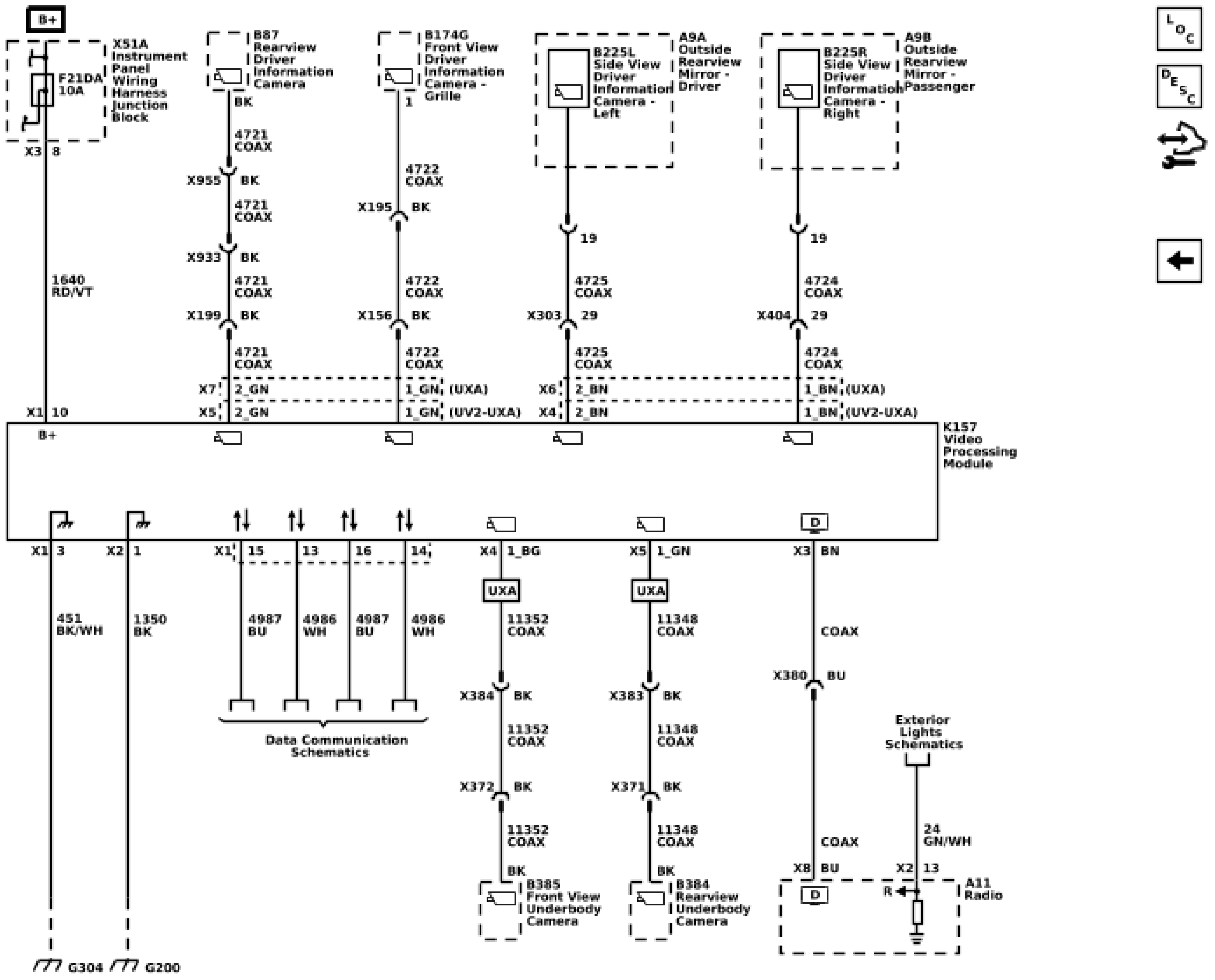
Schematic and Routing Diagrams

Image Display Camera Schematics (Rearview Driver Information Camera (UVB))


F84UA
K219
Lighting
Control
Module
X1 6
24
GN/WH
J110
Exterior
Lights
Schematics
X301 22
X2 13
R
B87
Rearview Driver
Information Camera
1
4721
COAX
X955 BK
X933 BK
X199 BK
X399 BU
X8 BU
A11
Radio

6853058

Image Display Camera Schematics (360 Degree Vision (UV2 / UXA))


B+
X51A Instrument Panel Wiring Harness Junction Block
F21DA 10A
X3 8
1640 RD/VT
X1 10
B+
B87 Rearview Driver Information Camera
BK
4721 COAX
X955 BK
4721 COAX
X933 BK
4721 COAX
X199 BK
4721 COAX
X7 2_GN
X5 2_GN
B174G Front View Driver Information Camera - Grille
1
4722 COAX
X195 BK
4722 COAX
X156 BK
4722 COAX
1_GN (UXA)
1_GN (UV2-UXA)
B225L Side View Driver Information Camera - Left
A9A Outside Rearview Mirror - Driver
19
4725 COAX
X303 29
4725 COAX
X6 2_BN
X4 2_BN
B225R Side View Driver Information Camera - Right
A9B Outside Rearview Mirror - Passenger
19
4724 COAX
X404 29
4724 COAX
1_BN (UXA)
1_BN (UV2-UXA)
K157 Video Processing Module
X1 3
451 BK/WH
X2 1
1350 BK
G304
G200
X1 15
13
16
14
4987 BU
4986 WH
4987 BU
4986 WH
Data Communication Schematics
X4 1_BG
UXA
11352 COAX
X384 BK
11352 COAX
X372 BK
11352 COAX
BK
B385 Front View Underbody Camera
X5 1_GN
UXA
11348 COAX
X383 BK
11348 COAX
X371 BK
11348 COAX
BK
B384 Rearview Underbody Camera
D
X3 BN
COAX
X380 BU
COAX
X8 BU
D
Exterior Lights Schematics
24 GN/WH
X2 13
R
A11 Radio
LOC
DESC

6853059

Description and Operation

Rear Vision Camera Description and Operation

Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the A11 Radio.

When the transmission is placed into REVERSE, a signal is sent to the A11 Radio indicating that camera operation is requested. The rearview camera sends video information to the A11 Radio through a coax cable. The coax cable also provides power from the A11 Radio to the rearview camera.

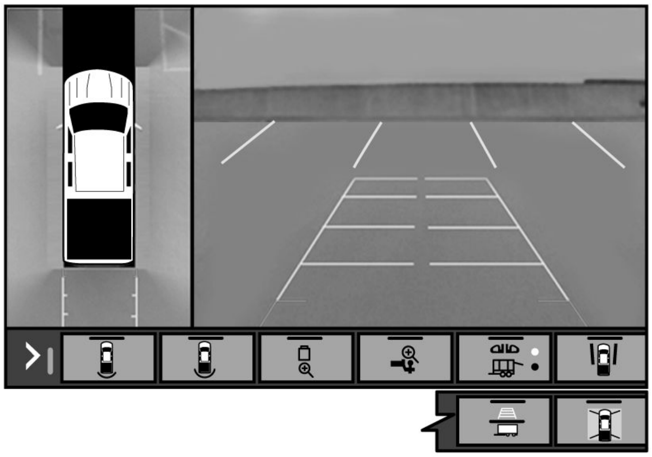
The following conditions may cause a degraded rear vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

If a malfunction is detected in the system, SERVICE REAR VISION CAMERA may be displayed on the Info Display Module as an indicator to the customer that a problem exists that requires service.

Surround Vision Camera Description and Operation (UV2/UXP & UXA)

Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.



5147466

The Surround Vision- Trailer/Underbody Vision camera system (TRG) consists of the following components:

- K157 Video Processing Control Module
- A11 Radio
- B87 Rearview Driver Information Camera
- B225L Sideview Driver Information Camera – Left
- B225R Sideview Driver Information Camera – Right
- B174G Frontview Driver InformationCamera – Grille
- Trailer Rearview Camera (if customer installed)
- Front View Underbody Camera
- Rearview Underbody Camera

Features of the Surround Vision– Trailer Vision System

- Rear camera (B87 Rearview Camera) alongside overhead view is displayed in reverse
- Trailer Rearview Camera (if customer installed) image is displayed when selected via the Trailering application on the Infotainment screen.
- Front View Underbody Camera image and Rearview Underbody Camera image are displayed when selected via the application on the Infotainment screen.
- Hitch View (when selected) displays a rear view camera image with a single guideline, which aids in aligning the truck to the trailer. If the driver shifts into PARK while in Hitch View, the parking brake is engaged to keep the vehicle from rocking when the driver gets out of the vehicle to hitch the trailer.
- Surround Vision displays an overhead view of the area surrounding the vehicle, along with the rear camera views in the center stack. The side

cameras are on the bottom of the outside rearview mirrors, the rear vision camera is above the license plate, a rearview trailer camera can be mounted on the rear of a trailer, and a trailer interior camera can be mounted on the rear of a trailer.

Note: Images from the Sideview Cameras are only displayed when both front doors are properly closed.

System Operation

The video processing control module is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the video processing control module for processing. The video processing control module will then send the processed image output to infotainment system via another coaxial cable.

The video processing control module receives CAN information from Rear Park Assist object detection module and Steering Wheel angle from body control module during Reverse. A warning triangle may display during the surround view screen if Rear Parking Assist has detected an object during a reverse. This triangle changes from amber to red and increases in size the closer the object. Also a dynamic guideline is displayed in Reverse to show the projected path of the vehicle.

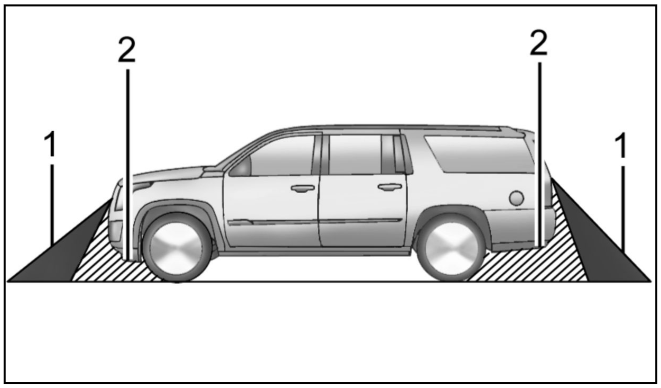
When the vehicle is traveling at speeds slower than 6 mph (10kph) the video processing control module will power up the cameras and send a video signal to the radio.

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on any camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Body damage to the vehicle
- Extreme high temperatures or extreme temperature changes

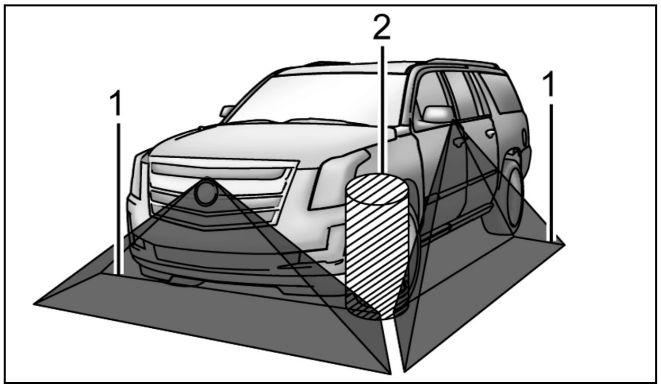
Surround Vision Camera Description and Operation (UV2/UXP - UXA)

Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.



4291164

1. View displayed by the surround vision camera
2. Area not shown



4291749

1. View displayed by the surround vision camera
2. Area not shown

The surround vision camera system consists of the following components:

- B87 Rearview Camera
- B174G Frontview Camera – Grille
- K157 Video Processing Control Module
- A11 Radio **OR** K74 Human Machine Interface Module
- B225L Sideview Camera – Left
- B225R Sideview Camera – Right
- X20 Memory Card Receptacle (with XVR)

When the vehicle is traveling at speeds slower than 6 mph (10kph) the video processing control module will power up the cameras and send a video signal to the radio or human machine interface module.

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions

- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

Surround Vision displays an overhead view of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear vision camera is above the license plate.

Note: Images from the Sideview Cameras are only displayed when both front doors are properly closed.

Features of the Surround Vision System

- Rear camera (B87 Rearview Camera) view alongside overhead view is displayed in reverse
- Front camera (B174G Frontview Camera – Grille) view alongside overhead view is displayed after shifting out of reverse to Neutral or Drive
- Will display front view when front park assist object is within trigger range calibration value (30 cm (12 in) in a forward gear
- Image is removed from display when vehicle speed exceeds speed calibration (10kph/6 mph) or button press / screen touch

System Operation

The video processing control module is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the video processing control module for processing. The video processing control module will then send the processed image output to infotainment system via another coaxial cable.

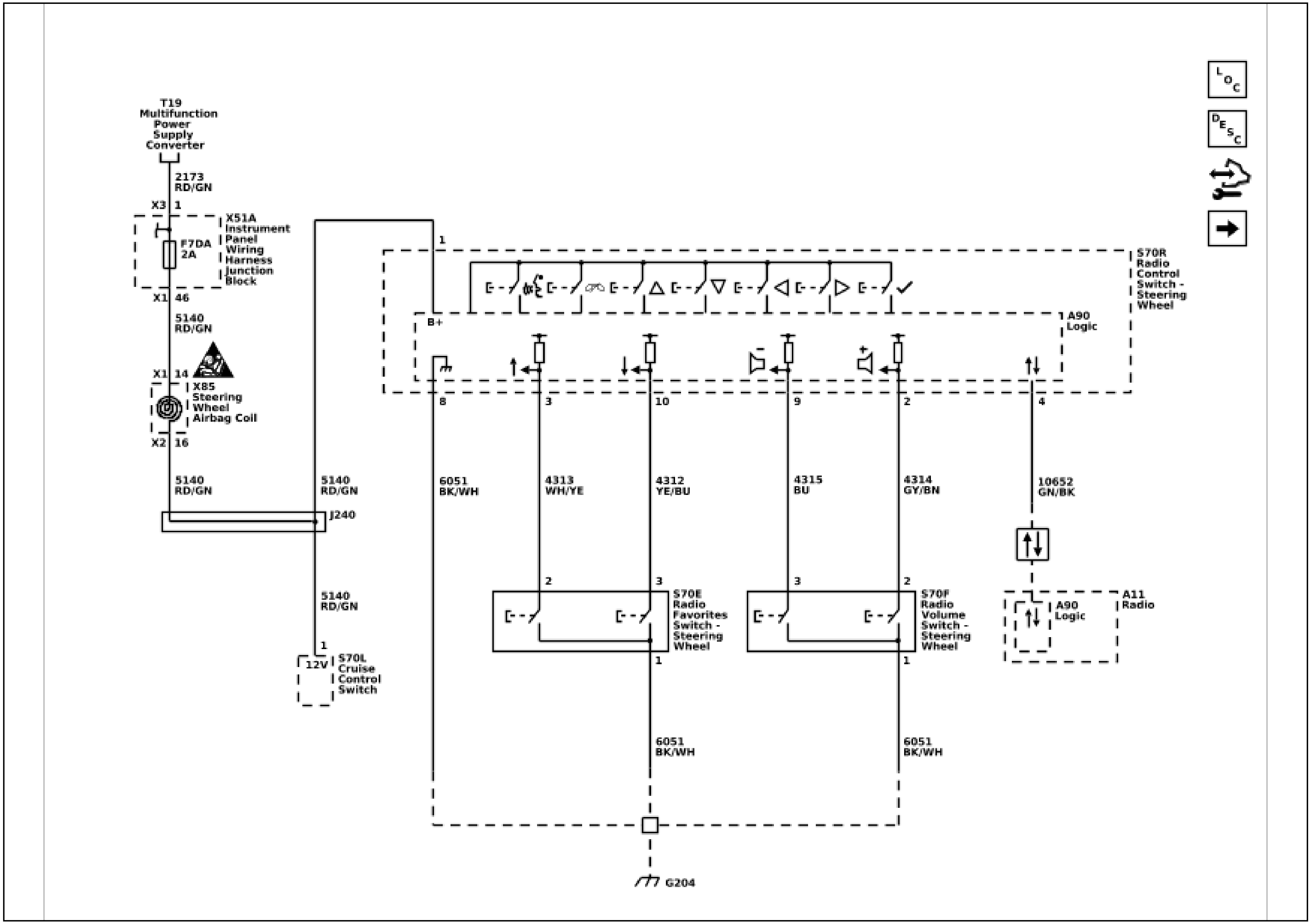
The video processing module receives various vehicle information (such as steering wheel angle, object detection, etc) from other sources such as parking assist modules and the Body Control Module via serial data. This information is used to produce the enhanced surround vision system images that include a warning triangle that may display if an object is detected nearby. This triangle changes from amber to red and increases in size as the object gets closer to the vehicle. Also, dynamic guidelines are displayed in Reverse to show the projected path of the vehicle based on steering wheel angle. Due to this use of vehicle information, any faults or DTCs in these related systems can prohibit proper surround vision operation.

If equipped, the video processing control module system may have a memory card receptacle (with XVR) located in the trunk. The memory card receptacle interfaces with the video processing control module via a USB cable. The memory card receptacle also receives fused battery voltage and ground from the video processing control module. The video processing control module uses the memory card as a mass storage device, similar to a USB storage device.

Secondary and Configurable Customer Controls

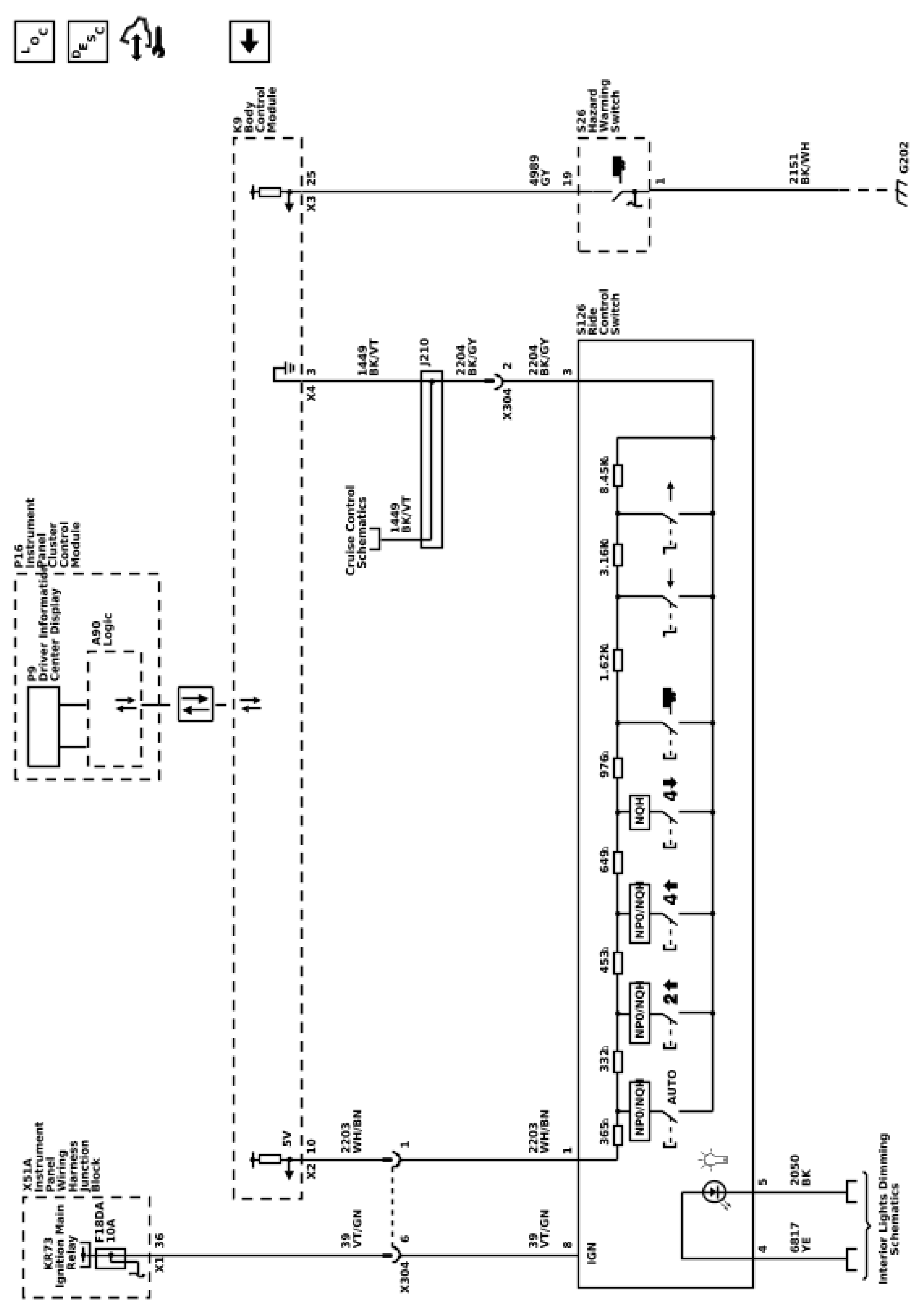
Schematic and Routing Diagrams

Steering Wheel Secondary/Configurable Control Schematics (Steering Wheel Controls)


T19 Multifunction Power Supply Converter
2173 RD/GN
X3 1
X51A Instrument Panel Wiring Harness Junction Block
F7DA 2A
X1 46
5140 RD/GN
X1 14
X85 Steering Wheel Airbag Coil
X2 16
5140 RD/GN
J240
5140 RD/GN
5140 RD/GN
1
12V
S70L Cruise Control Switch
1
B+
S70R Radio Control Switch - Steering Wheel
A90 Logic
8
3
10
9
2
4
6051 BK/WH
4313 WH/YE
4312 YE/BU
4315 BU
4314 GY/BN
10652 GN/BK
2
3
S70E Radio Favorites Switch - Steering Wheel
1
3
2
S70F Radio Volume Switch - Steering Wheel
1
A90 Logic
A11 Radio
6051 BK/WH
6051 BK/WH
G204

6853139

Steering Wheel Secondary/Configurable Control Schematics (Ride Control and Tow/Haul Mode Switch)


6853140
LOC
DESC
K9 Body Control Module
X3 25
4989 GY
19
S26 Hazard Warning Switch
1
2151 BK/WH
G202
X4 3
1449 BK/VT
J210
2204 BK/GY
2
X304
3
S126 Ride Control Switch
Cruise Control Schematics
1449 BK/VT
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
8.45K
3.16K
1.62K
976
649
453
332
365
NQH
NP0/NQH
NP0/NQH
NP0/NQH
4
4
2
AUTO
5V
X2 10
2203 WH/BN
1
2203 WH/BN
1
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F18DA 10A
X1 36
39 VT/GN
6
X304
39 VT/GN
8
IGN
5
2050 BK
4
6817 YE
Interior Lights Dimming Schematics

Description and Operation

Drive Mode Description and Operation

The drive mode system is a customer configurable control that allows the vehicle operator to tailor the vehicle operation and driveability parameters based on driving conditions. The drive mode is controlled by the vehicle operator through a Drive Mode Switch. The Drive Mode Switch may be a single switch or a part of a switch bank. It may also be a rotary knob or found in the Driver Information Center.

The Drive Mode Switch is an input to the Engine Control Module. The Engine Control Module will change operating parameters based on this input. The Engine Control Module will also broadcast a message to all modules indicating the requested drive mode. Control modules that are involved in changing their operation based on differing drive modes will then change their operating values.

The main components of the drive mode system are:

- Drive Mode Switch
- Engine Control Module
- Body Control Module

Other control modules or components that may respond to the commanded drive mode are:

- Electronic Brake Control Module
- Power Steering Control Module
- Rear Differential Clutch Control Module
- Transmission Control Module

Steering Wheel Controls Description and Operation

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches.

The steering wheel controls are divided into a right-hand set and left-hand set. The switches are connected to a LIN serial data circuit and provide input to the A11 Radio or K9 Body Control Module.

- The S70E Favorites Switch consists of favorite up and favorite down functions.
- The S70F Radio Volume Switch consists of volume up and volume down control.
- The S70L Cruise Control Switch consists of various cruise control specific functions.
- The S70R Radio Control Switch controls various audio, communication and vehicle systems

Refer to the owners manual for more detailed operation of each steering wheel switch.

Steering Wheel Control Components

S70E Radio Favorites Switch - Steering Wheel
The S70E Favorites Switch is a momentary contact switch located on the left rear side of the steering wheel. When one of the switches is depressed the signal is grounded, the signal is sent through the S70R Radio Control Switch which outputs a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

Note: In vehicles with RPO 5W4 (Special Service Package) or RPO 9C1 (Sales Package-Police Vehicle), the steering wheel controls on the left rear side do not control radio favorites. Instead, momentary output in blunt cut harness for two-way radio microphone and latching output in blunt cut siren/light.

S70F Radio Volume Switch - Steering Wheel
The S70F Radio Volume Switch is a momentary contact switch located on the right rear side of the steering wheel. When one of the switches is depressed the signal is grounded, the signal is sent through the S70R Radio Control Switch which outputs a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

S70L Cruise Control Switch
The S70L Cruise Control Switch is a resistive ladder design, with each cruise control function switch having a different resistance value. The distance sensing cruise control gap up/down has its own 5V reference circuit from the K9 Body Control Module. The cruise control set/coast/resume/accelerate switch has its own 5V reference circuit from the K9 Body Control Module. The K9 Body Control Module detects a specific voltage value that is associated with the cruise control function switch being activated and sends the appropriate serial data message to the K20 Engine Control Module to complete the request.

For information on Cruise Control, refer to *Cruise Control Description and Operation 5-4*

S70R Radio Control Switch - Steering Wheel
The S70R Radio Control Switch is a set of momentary contact switches located on the right side of the steering wheel. When a switch is depressed the signal is grounded, the S70R Radio Control Switch sends a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

Section 5

Engine/Propulsion

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Cruise Control Description and Operation 5-4
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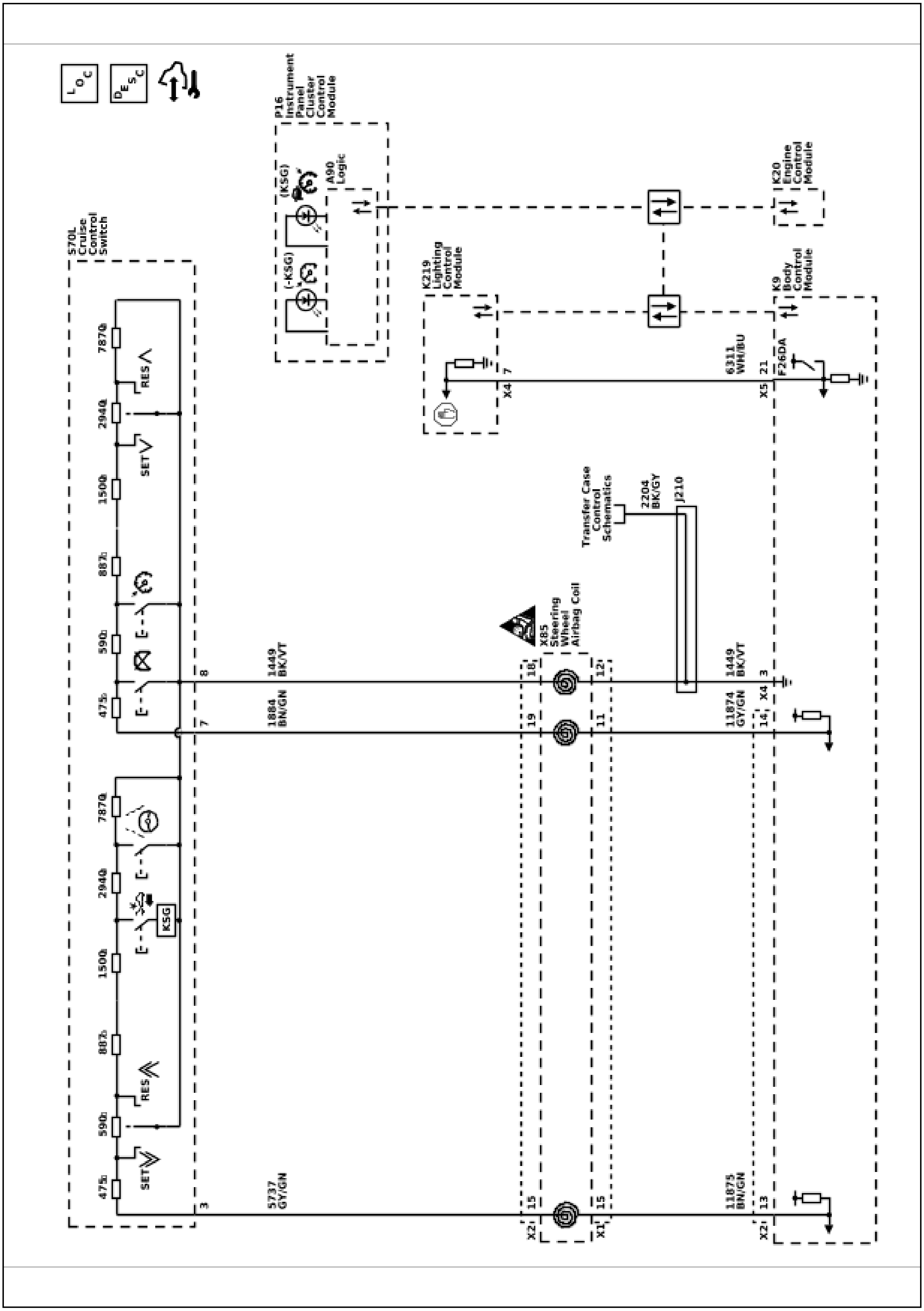
Engine/Propulsion

Cruise Control

Schematic and Routing Diagrams

Cruise Control Schematics (Cruise Control)


6852957
S70L Cruise Control Switch
P16 Instrument Panel Cluster Control Module
(-KSG)
(KSG)
A90 Logic
K219 Lighting Control Module
K20 Engine Control Module
K9 Body Control Module
X85 Steering Wheel Airbag Coil
Transfer Case Control Schematics
2204 BK/GY
J210
6311 WH/BU
F26DA
1449 BK/VT
1884 BN/GN
11874 GY/BN
5737 GY/GN
11875 BN/GN
RES
SET
KSG
787Ω
294Ω
150Ω
88Ω
59Ω
47Ω
X1
X2
X4
X5
3
7
8
11
12
13
14
15
18
19
21

Description and Operation

Cruise Control Description and Operation

Note: If the vehicle is equipped with RPO KSG, it also has Adaptive Cruise Control. Refer to the Object Detection or the Driver Assistance Systems subsection for schematics, diagnostics, and description and operation related to Adaptive Cruise Control functions.

Cruise control is a speed control system that maintains a desired vehicle speed under normal driving conditions at speeds above 40 km/h (25 mph). Steep grades may cause variations in the selected vehicle speeds.

The following are the main components of the Cruise Control System:

- The accelerator pedal
- The brake pedal position (BPP) sensor
- The body control module (BCM)
- The cruise on/off switch
- The cruise control cancel switch
- The + RES switch (equivalent to resume/accelerate switch)
- The − SET switch (equivalent to set/coast switch)
- The engine control module (ECM)
- The throttle actuator control (TAC) motor (gasoline engines only)
- The vehicle speed sensor

The body control module (BCM) monitors the signal circuit of the cruise control switches, which are located on the steering wheel. The BCM relays the cruise control switch status to the engine control module (ECM) via the serial data circuit. The ECM uses the status of the cruise control switch to determine when to capture and maintain the vehicle speed. The ECM monitors the vehicle speed signal circuit in order to determine the desired vehicle speed.

Voltage is supplied to the cruise control switch via the steering wheel control switch reference voltage circuit supplied by the BCM. The cruise control function switches are arranged in a resistive ladder design, with each cruise control function switch having a different resistance value. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated. The BCM sends a serial data message to the ECM indicating that the on/off switch is active. Similarly, when the normally open + RES switch or the normally open − SET switch are pressed, the switch closes and the BCM detects the predetermined voltage signal on the cruise control resume/accel and set/coast switch signal circuit. The BCM sends a serial data message to the ECM indicating that the + RES switch or the − SET switch is active.

Cruise Control Engaged

The Cruise Control System will engage and adjust vehicle speeds, based on the activation of the following cruise control switches, which are located on the steering wheel:

- On/Off
- + RES
- − SET

To engage the Cruise Control System, ensure that the vehicle speed is above 40.2 km/h (25 mph), turn the cruise On/Off switch ON and momentarily press the − SET switch. The ECM will engage the Cruise Control System and record the vehicle speed. The ECM sends a serial data message to the instrument panel cluster (IPC) in order to illuminate the Cruise Engaged indicator in the IPC. Refer to the vehicle owner’s manual for the location and operation of the cruise control On/Off indicators and driver information center (DIC) messages.

Pressing the accelerator pedal while the Cruise Control System is engaged, allows the driver to override the Cruise Control System in order to accelerate the vehicle beyond the current set vehicle speed. When the accelerator pedal is released, the vehicle will decelerate and resume the current set vehicle speed.

The driver can also override the current set vehicle speed via the − SET switch and the + RES switch. When the Cruise Control System is engaged, pressing and holding the − SET switch will allow the vehicle to decelerate from the current set vehicle speed without deactivating the Cruise Control System. When the − SET switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the − SET switch will allow the vehicle to decelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the − SET is momentarily pressed, with a minimum vehicle speed of 38 km/h (24 mph). Refer to the vehicle Owner’s Manual for more information.

Pressing and holding the + RES switch, when the Cruise Control System is engaged, will allow the vehicle to accelerate to a greater vehicle speed than the current set vehicle speed. When the + RES switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the + RES switch will allow the vehicle to accelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the + RES switch is momentarily pressed. Momentarily activating the + RES switch will recall the previous vehicle speed, after the cruise control system has been disengaged by pressing the brake pedal, or CANCEL switch. Refer to the vehicle Owner's Manual for more information.

Cruise Control Disengaged

The engine control module (ECM) disengages the cruise control operation based on the signals from the following switches:

- The brake pedal position (BPP) sensor
- The On/Off switch
- The cruise control cancel switch

The Cruise Control System will disengage when the brake pedal is applied. The body control module (BCM) monitors the BPP sensor via the BPP sensor signal circuit as the voltage signal increases while the pedal is further applied. The ECM monitors the BPP signal through a discrete input and a serial data message signal from the BCM indicating the brake status. When either signal indicates the brake pedal is applied, the ECM will disengage the cruise control system.

The Cruise Control System will also disengage when the cruise control on/off switch is switched OFF, or the cruise control cancel switch is activated. The body control module (BCM) determines when the cruise control cancel switch is activated. When the normally open cancel switch is closed, the BCM detects the predetermined voltage signal on the cruise control function switch circuit. The vehicle speed stored in the memory of the engine control module will be erased when the cruise control On/Off switch is turned OFF, or the ignition switch is turned OFF. The BCM sends a serial data message to the ECM in order to disengage the cruise control system. When the Cruise Control System has been disengaged, the ECM sends a serial message to the instrument panel cluster (IPC) in order to turn OFF the Cruise Engaged indicator.

Every time the Cruise Control System is disengaged, the ECM will keep track of the reason for system disengagement. The last 8 disengagement reasons will be recorded within the ECM memory. The scan tool will display the last 8 Cruise Disengage History parameters, in which one out of approximately 50 possible reasons will be displayed in each of these 8 parameters. For the disengagement reason to be displayed within the scan tool parameter the Cruise Control System is active and disengagement is requested.

When engagement of the system is requested but an engagement inhibit is present, the most recent inhibit reason is recorded in the ECM history. The scan tool will display the most recent inhibit reason, in which one out of approximately 50 possible reasons will be displayed.

Cruise Control Inhibited

The engine control module (ECM) inhibits the cruise control operation when any of the following conditions exist:

- The ECM has not detected a brake pedal activation from the body control module (BCM) this ignition cycle.
- A Cruise Control System DTC has been set.
- The vehicle speed is less than 38.6 km/h (24 mph).
- The vehicle speed is too high.
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM is low.
- The engine RPM is high.
- The system voltage is not between 9 volts and 16 volts.
- The Antilock Brake System (ABS)/Traction Control System (TCS) is active for more than a calibratable time (typically 0.3 to 0.7 seconds).

Cruise Control Inhibit Reasons

This is a general list of inhibit reasons. Not every inhibit reason is applicable to all vehicles. Refer to the scan tool inhibit reason list for the last 8 reasons that have been recorded during the current ignition cycle.

Scan Tool Name	Description	Long Description
Acceleration Rate too High	High acceleration	The vehicle acceleration rate is too high.
TRAILER BRAKES APPLIED	Trailer brakes applied	The trailer brake system has been activated.

Scan Tool Name	Description	Long Description
Acceleration Time	Rate limiting fault	Cruise torque request rate limiting active too long.
Adaptive Cruise Control Configuration Incorrect	Adaptive cruise control option mismatch	The cruise control type (adaptive cruise or conventional cruise) is mismatched between the engine control module (ECM) and the body control module (BCM).
Antilock Braking System Active	Antilock Braking System Active	The antilock braking system was active. Only reported on enhanced cruise control vehicles.
Automatic Braking Engine Torque Request Signal Communication Malfunction	Automatic braking engine torque request signal communication malfunction	An engine control module to electronic brake control module (EBCM) serial data fault is active or communication has been lost between the modules.
Automatic Braking Malfunction	Brake system malfunction	The electronic brake control module has detected a failure that does not allow automatic braking to be performed.
Axle Torque Serial Communication Malfunction	Axle Torque Serial Communication Malfunction	The adaptive cruise control is being inhibited by the ECM because a serial data signal timeout error has occurred with the hybrid max/min torque signals.
Battery Voltage Too High	Voltage above high voltage threshold	The ignition voltage is too high at the engine control module (typically 18 volts).
Battery Voltage Too Low	Voltage below low voltage threshold	The ignition voltage is low at the engine control module (typically 9 volts).
Brake Pedal Applied	Brake pedal apply	The brake pedal was applied.
Brake Pedal Not Initialized	Brake before cruise	The brake pedal has not been seen as applied prior to driver request to engage cruise with set switch. A brake pedal apply must be seen before allowing cruise engagement during each key cycle. On a vehicle equipped with a manual transmission, a clutch pedal apply may satisfy the brake pedal apply criteria.
Brake Pedal Position Malfunction	Brake pedal position signal invalid	A brake pedal apply circuit fault has been detected.
Brake Pedal Position Signal Malfunction	DTC P0703 is active or maximum time elapsed without receiving a valid Brake Pedal Position signal.	A serial data fault is active or communication has been lost with the module sending the brake pedal apply state.
Brake Pedal Pressure Detected	Brake pedal driver applied pressure detected	A brake pedal apply has been detected based on brake pedal pressure as measured by the electronic brake control module.
Brake Pedal Released Position Not Learned	Brake apply sensor home position not learned	The brake pedal position sensor released position is not learned.
Brake System Malfunction	Adaptive cruise control automatic braking failed	Adaptive cruise control automatic braking inoperative.
Calculated Torque	Calculated engine torque	The engine torque calculation is incorrect.
Clutch Pedal Applied	Clutch switch active	The clutch pedal was applied.
Coast Below Minimum Speed	Coast below low speed inhibit	The Set/Coast switch was depressed and the vehicle slowed below the minimum cruise control operating speed.
Coast Mode	Coast disengage	Cruise control is in coast mode with the Set/Coast switch depressed and is requesting no throttle.
Control Function Active	DLC override	A scan tool is plugged into the Data Link Connector (DLC) connector.
Control Module Memory Malfunction	Memory failure	A control module memory failure has been detected.
Control Module Processor Malfunction	Processor integrity fault (random access memory corruption)	An engine control module software error has occurred.

Scan Tool Name	Description	Long Description
Crawl Mode Active	Crawl Mode Active	Crawl mode is active and inhibiting cruise control.
Cruise Control Cancel Switch Active	Cancel switch active	The cruise control cancel switch was depressed.
Cruise Control Software Malfunction	Sequence of completion checks	A cruise control software execution error has occurred.
Cruise Control Switch Inactive	On/Off switch in Off state	The cruise control On/Off switch is turned off.
Cruise Control Switch Invalid	Analog cruise switch input out of range	The cruise control switch voltage signal is in an invalid range.
Cruise Control Switch Serial Communication Malfunction	Serial data fault (cruise switch serial communication fault)	The cruise control switch serial data fault is active or communication has been lost with the module sending cruise control switch states.
Deceleration Rate Too High	High deceleration	The vehicle deceleration rate is too high.
Diagnostic Trouble Code (DTC) Set	Malfunction in PCM/ECM (DTC active)	A DTC is active or in history that inhibits cruise control operation.
Distance Sensing Cruise Control Brake Pedal Applied	Distance Sensing Cruise Control Brake Pedal Applied	Adaptive cruise control is being inhibited by the ECM because a brake pedal apply has occurred.
Distance Sensing Cruise Control Cancel Switch Active	Distance Sensing Cruise Control Cancel Switch Active	Adaptive cruise control is being inhibited by the ECM because the driver applied the cancel switch.
Distance Sensing Cruise Control Data	Serial data fault for adaptive cruise control throttle control and brake control signals sent by the distance sensing cruise control module	A distance sensing cruise control module serial data fault is active or communication has been lost between the distance sensing cruise control module and the engine control module.
Distance Sensing Cruise Control Inhibit	Distance sensing cruise control inhibited	The distance sensing cruise control system is inhibited.
Distance Sensing Cruise Control Invalid Engage	Distance Sensing Cruise Control Invalid Engage	Adaptive cruise control is being inhibited by the ECM because an invalid sequence of cruise control applies, brake pedal applies, or an invalid speed range has been detected.
Distance Sensing Cruise Control Off	Distance Sensing Cruise Control Off	Adaptive cruise control is being inhibited by the ECM because the driver has turned off the cruise on/off switch.
Distance Sensing Cruise Control Reduced Engine Power	Distance Sensing Cruise Control Reduced Engine Power	Adaptive cruise control is being inhibited by the ECM due to a fault resulting in “Reduced Engine Power”.
Driven Wheel Speed Higher Than Non Driven Wheel Speed	Driven wheel speed greater (wheel slip detection)	The driven wheel speed is greater than the non driven wheel speed (slip detection).
Engine Control Module	PCM/ECM inhibit (RAM corruption)	Engine control module internal communication error.
Engine Control Module (ECM) Reset	ECM running reset	An engine control module running reset has occurred.
Engine Overspeed Protection Active	Injectors disabled (engine overspeed fuel cut-off active)	Engine RPM limiter active with fuel cut off active.
Engine Overtemperature Protection Active	Engine metal overtemp active	The engine is over temperature. The engine is overheated.
Engine Run Time	Engine run time not elapsed	The engine has not been running long enough, typically five seconds.
Engine Speed	Engine speed too low or too high	The engine RPM is too low (near stall) or too high (near engine RPM fuel shutoff).
Excessive Accelerator Position Override	Pedal greater than cruise (override)	The driver has overridden cruise control set speed with accelerator pedal for greater than an allowable time.
1st Gear	First Gear	Transmission is engaged in 1st gear.

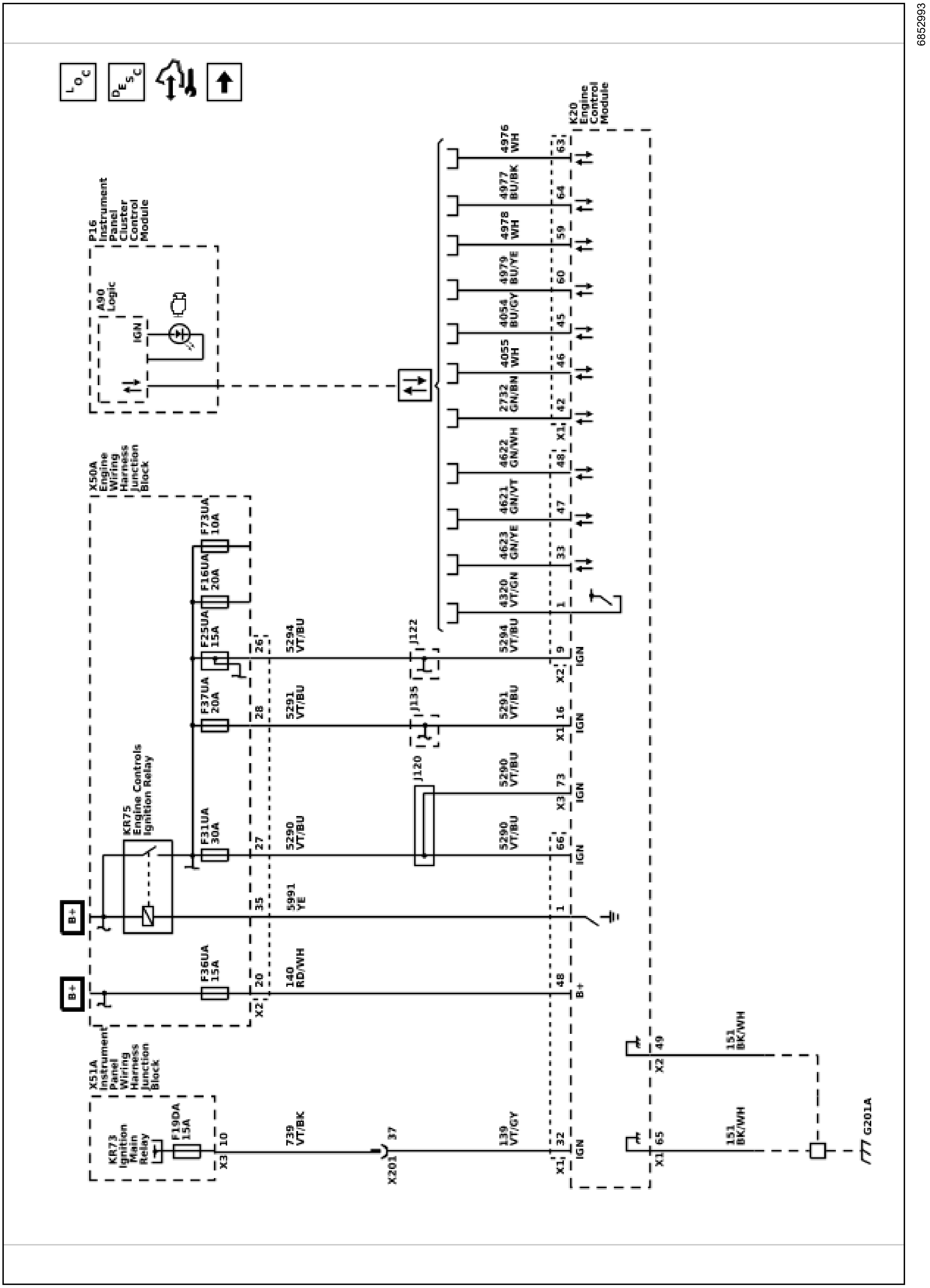
Scan Tool Name	Description	Long Description
Gear Change without Applied Clutch Pedal	Manual transmission out of gear with no clutch pedal apply	Manual transmission shifted to Neutral without clutch pedal being applied.
Hill Descent Control Active	Hill Descent Control System Active	The hill descent control system has gone active.
Hill Descent Control Serial Communication Malfunction	Hill Descent Control Serial Communication Malfunction	An electronic brake control module serial data fault is active or communication has been lost between the EBCM and ECM.
Hybrid/EV System	Hybrid Cruise Disengage	Cruise control is inhibited on hybrid applications when “Regen on Demand” is requested by the driver via the tap-up/tap-down paddles.
Illegal Mode	Illegal cruise mode	The cruise control mode is incorrect based on switch states.
Lane Center Control Serial Data Error	Lane Center Control Serial Communication Malfunction	Adaptive cruise control is being inhibited by the ECM because a serial data error has been detected on a vehicle with Lane Center Control.
Non Driven Wheel Speed Higher Than Drive Wheel Speed	Non-driven wheel speed greater	The non driven wheel speed is greater than the driven wheel speed.
None	None	This disengagement reason may be displayed after a dead battery repair or module replacement.
Park Brake Applied	Park brake switch signal active	The parking brake is applied.
Power Take-Off Active	Power Take Off active	The Power Take Off (PTO) system is active.
Rear Axle in Low Range	Rear axle in low	The rear axle is in low range.
Set/Coast and Resume/Accelerate Switches Active Simultaneously	SET and RESUME switches simultaneously active	The Set/Coast and Resume/Accelerate switches were pressed simultaneously.
Set/Coast Switch Active With Vehicle Speed Higher Than Set Point	Over schedule tap-down	The Set/Coast switch is selected, vehicle speed is above set speed and does not decrease. May be due to traveling down hill.
Speed Limiting/Warning System On	Speed limiter/warning On/Off switch turned on	Driver has turned on the Speed Limiter/Warning on/off switch. Cruise is disabled/inhibited and cruise on/off switch will be set to Off.
Throttle Actuator Control System	Electronic throttle control prevents cruise operation	The electronic throttle control system has detected a failure in the throttle control hardware.
Traction Control Active	Traction control active	The traction control system was active.
Traction Control System Malfunction	Traction Control System Malfunction	A fault is present in the traction control system.
Traction Control System Off	Traction Control System Off	The traction control system has been turned off by the driver.
Transfer Case in 4WD Low Range	Transfer case in 4WD Low	The transfer case is in low range.
Transmission Gear Ratio Malfunction	Transmission gear fault	A transmission DTC is active or in history, that inhibits cruise control operation.
Transmission Not in Forward Gear	Transmission in neutral, reverse or park	The transmission gear selector is not in a forward gear.
Vehicle Overspeed Protection Active	MPH limited fuel (vehicle overspeed fuel cut-off active)	The vehicle overspeed protection is active with fuel cut off active.
Vehicle Speed Higher Than Set Point	Over schedule	Vehicle speed has exceeded driver selected set speed by more than an allowable amount. This may occur while driving down a significant grade or driver overriding cruise while performing a passing maneuver.
Vehicle Speed Lower Than Set Point	Under schedule	The vehicle speed is below cruise control set speed by more than an allowable amount.
Vehicle Speed Too High	Vehicle speed exceeds high speed threshold	Vehicle speed has exceeded maximum cruise operating speed.

Scan Tool Name	Description	Long Description
Vehicle Speed Too Low	Vehicle speed drops below low speed threshold	Vehicle speed dropped below the cruise control minimum operating speed. May be due to hilly terrain and low vehicle speed. Manual transmission gear selection and engine torque may contribute to this disengagement reason.
Vehicle Stability System Active	Vehicle stability control active	The vehicle stability control system was active.
Vehicle Stability System Malfunction	Vehicle Stability System Malfunction	A fault has been detected in the vehicle stability control system.
Vehicle Stability System Off	Vehicle Stability System Off	The vehicle stability control system has been turned off by the driver.

Engine Controls and Fuel - 2.7L

Schematic and Routing Diagrams

Engine Controls Schematics (Power, Ground, Serial Data, and MIL)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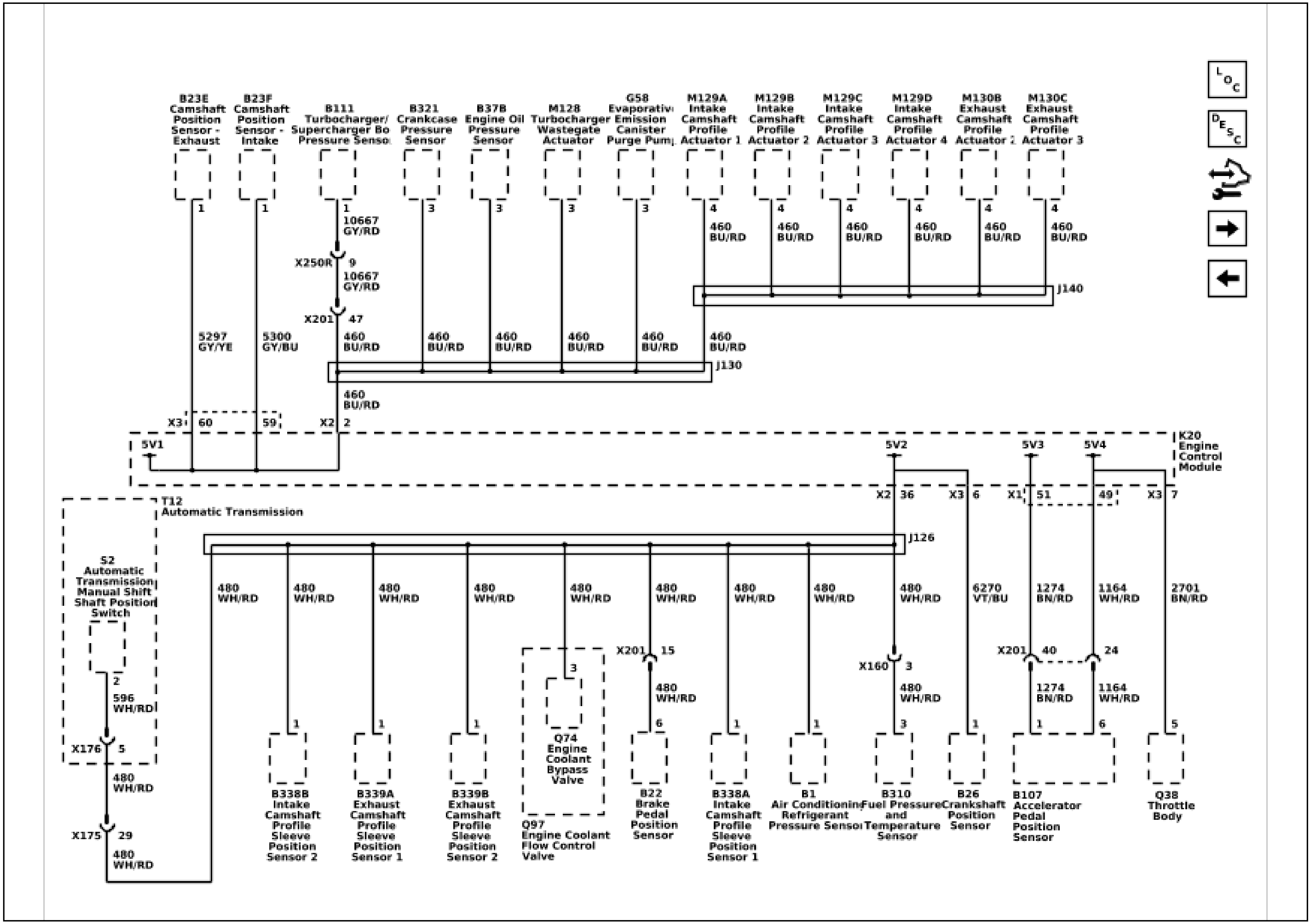
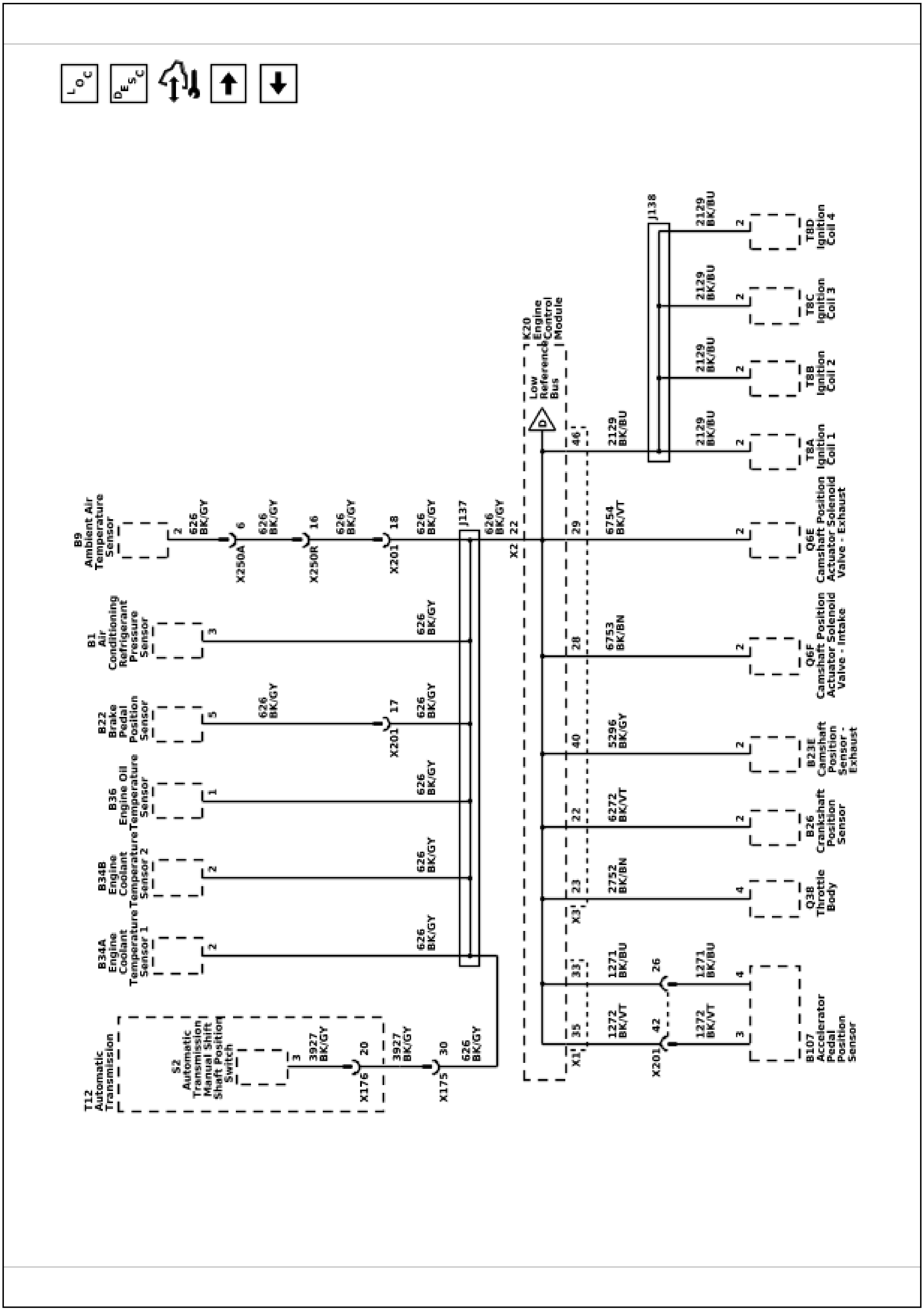
LOC
DESC
P16 Instrument Panel Cluster Control Module
A90 Logic
IGN
X50A Engine Wiring Harness Junction Block
F73UA 10A
F16UA 20A
F25UA 15A
F37UA 20A
F31UA 30A
F36UA 15A
KR75 Engine Controls Ignition Relay
B+
B+
X2
26
28
27
35
20
5294 VT/BU
5291 VT/BU
5290 VT/BU
5991 YE
140 RD/WH
J122
J135
J120
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F19DA 15A
X3
10
739 VT/BK
X201
37
139 VT/GY
K20 Engine Control Module
4976 WH
4977 BU/BK
4978 WH
4979 BU/YE
4054 BU/GY
4055 WH
2732 GN/BN
4622 GN/WH
4621 GN/VT
4623 GN/YE
4320 VT/GN
5294 VT/BU
5291 VT/BU
5290 VT/BU
5290 VT/BU
63
64
59
60
45
46
42
X1
48
47
33
1
9
X2
16
X1
73
X3
66
1
48
32
X1
IGN
IGN
IGN
IGN
IGN
B+
X2
49
151 BK/WH
X1
65
151 BK/WH
G201A

Engine Controls Schematics (5V Reference Bus)

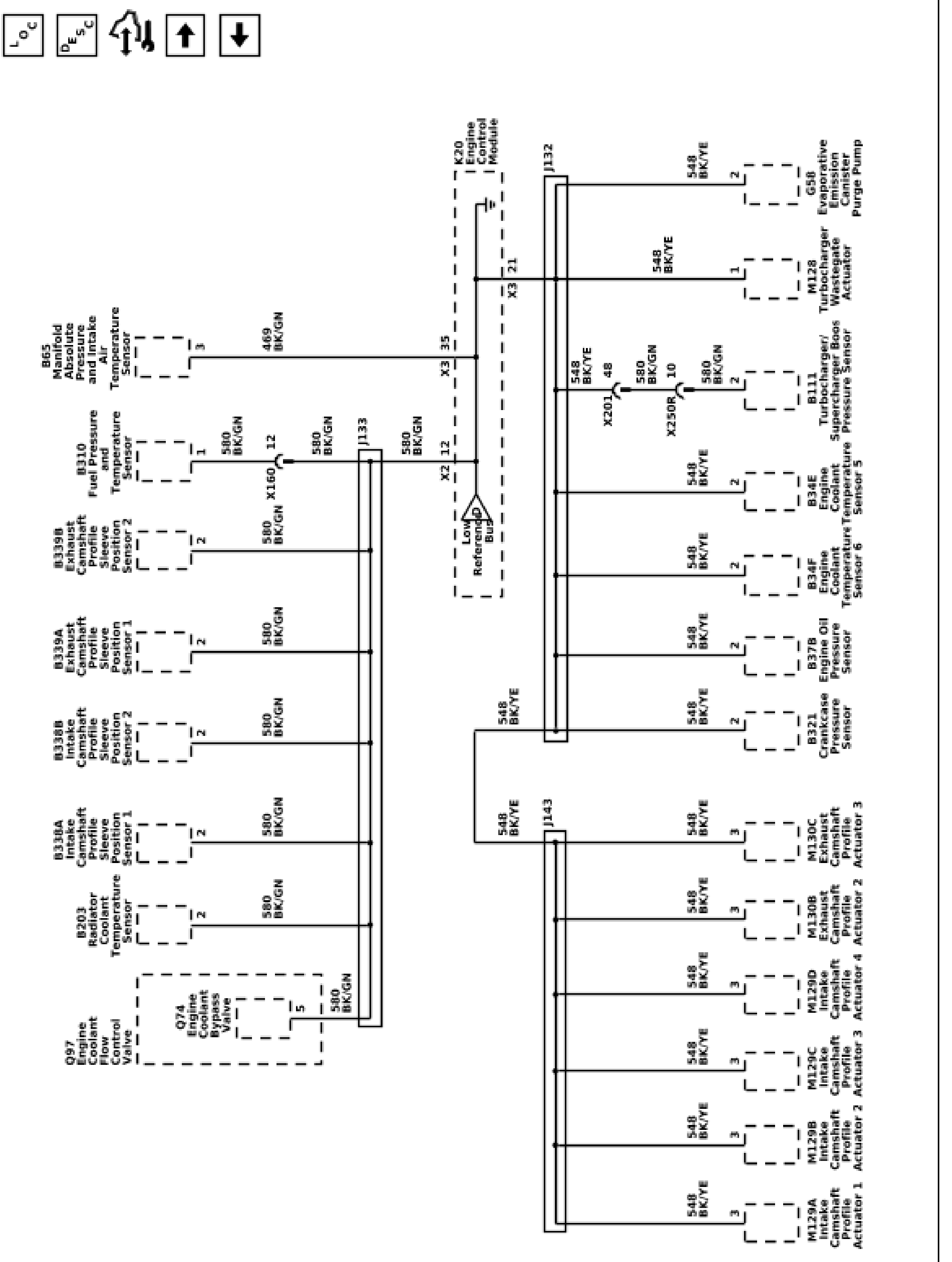

B23E Camshaft Position Sensor - Exhaust
B23F Camshaft Position Sensor - Intake
B111 Turbocharger/ Supercharger Bo Pressure Senso
B321 Crankcase Pressure Sensor
B37B Engine Oil Pressure Sensor
M128 Turbocharger Wastegate Actuator
G58 Evaporativ Emission Canister Purge Pum
M129A Intake Camshaft Profile Actuator 1
M129B Intake Camshaft Profile Actuator 2
M129C Intake Camshaft Profile Actuator 3
M129D Intake Camshaft Profile Actuator 4
M130B Exhaust Camshaft Profile Actuator 2
M130C Exhaust Camshaft Profile Actuator 3
1
1
1
3
3
3
3
4
4
4
4
4
4
10667 GY/RD
X250R 9
10667 GY/RD
X201 47
460 BU/RD
5297 GY/YE
5300 GY/BU
J140
J130
X3 60
59
X2 2
5V1
5V2
5V3
5V4
K20 Engine Control Module
X2 36
X3 6
X1 51
49
X3 7
T12 Automatic Transmission
S2 Automatic Transmission Manual Shift Shaft Position Switch
2
596 WH/RD
X176 5
X175 29
480 WH/RD
J126
6270 VT/BU
1274 BN/RD
1164 WH/RD
2701 BN/RD
X201 15
X160 3
X201 40
24
6
5
B338B Intake Camshaft Profile Sleeve Position Sensor 2
B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
Q74 Engine Coolant Bypass Valve
Q97 Engine Coolant Flow Control Valve
B22 Brake Pedal Position Sensor
B338A Intake Camshaft Profile Sleeve Position Sensor 1
B1 Air Conditioning Refrigerant Pressure Sensor
B310 Fuel Pressure and Temperature Sensor
B26 Crankshaft Position Sensor
B107 Accelerator Pedal Position Sensor
Q38 Throttle Body
LOC
DESC

6852994

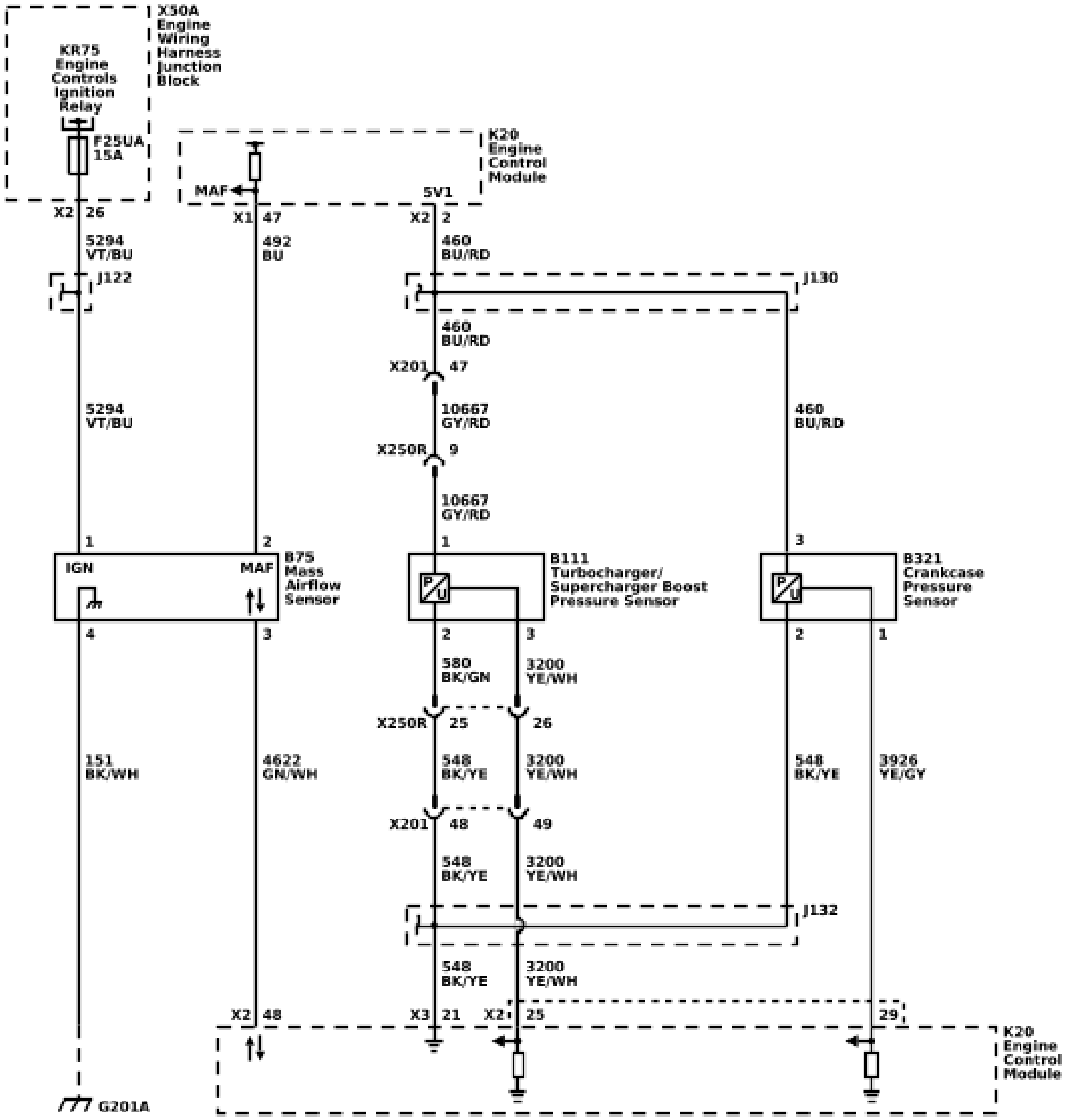
Engine Controls Schematics (Low Reference Bus 1 of 2)


6852995
B9 Ambient Air Temperature Sensor
B1 Air Conditioning Refrigerant Pressure Sensor
B22 Brake Pedal Position Sensor
B36 Engine Oil Temperature Sensor
B34B Engine Coolant Temperature Sensor 2
B34A Engine Coolant Temperature Sensor 1
T12 Automatic Transmission
S2 Automatic Transmission Manual Shift Shaft Position Switch
626 BK/GY
3927 BK/GY
X250A
X250R
X201
X176
X175
J137
J138
K20 Engine Control Module
Low Reference Bus
D
X1
X2
X3
2129 BK/BU
6754 BK/VT
6753 BK/BN
5296 BK/GY
6272 BK/VT
2752 BK/BN
1271 BK/BU
1272 BK/VT
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
Q6E Camshaft Position Actuator Solenoid Valve - Exhaust
Q6F Camshaft Position Actuator Solenoid Valve - Intake
B23E Camshaft Position Sensor - Exhaust
B26 Crankshaft Position Sensor
Q38 Throttle Body
B107 Accelerator Pedal Position Sensor

Engine Controls Schematics (Low Reference Bus 2 of 2)

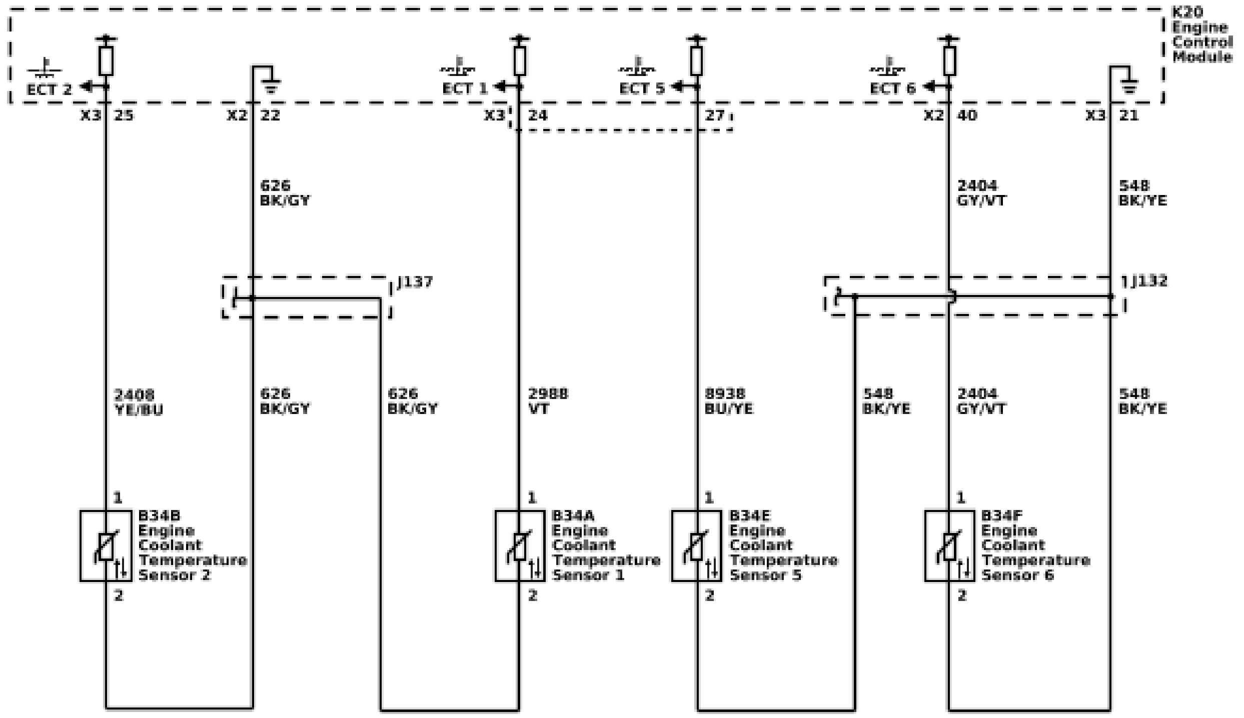

6852996
LOC
DESC
K20 Engine Control Module
Low Reference Bus
X3 35
X3 21
X2 12
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
3
469 BK/GN
B310 Fuel Pressure and Temperature Sensor
1
580 BK/GN
X160 12
J133
B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
B338B Intake Camshaft Profile Sleeve Position Sensor 2
B338A Intake Camshaft Profile Sleeve Position Sensor 1
B203 Radiator Coolant Temperature Sensor
Q97 Engine Coolant Flow Control Valve
Q74 Engine Coolant Bypass Valve
5
J132
548 BK/YE
G58 Evaporative Emission Canister Purge Pump
M128 Turbocharger Wastegate Actuator
X201 48
X250R 10
B111 Turbocharger/ Supercharger Boos Pressure Sensor
B34E Engine Coolant Temperature Sensor 5
B34F Engine Coolant Temperature Sensor 6
B37B Engine Oil Pressure Sensor
B321 Crankcase Pressure Sensor
J143
M130C Exhaust Camshaft Profile Actuator 3
M130B Exhaust Camshaft Profile Actuator 2
M129D Intake Camshaft Profile Actuator 4
M129C Intake Camshaft Profile Actuator 3
M129B Intake Camshaft Profile Actuator 2
M129A Intake Camshaft Profile Actuator 1

Engine Controls Schematics (Engine Data Sensors - Air Pressure, Crankcase Pressure and Temperature)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
K20 Engine Control Module
MAF
5V1
X2 26
X1 47
X2 2
5294 VT/BU
492 BU
460 BU/RD
J122
J130
460 BU/RD
X201 47
10667 GY/RD
X250R 9
5294 VT/BU
460 BU/RD
10667 GY/RD
1
2
1
3
IGN
MAF
B75 Mass Airflow Sensor
B111 Turbocharger/ Supercharger Boost Pressure Sensor
B321 Crankcase Pressure Sensor
P U
4
3
2
3
2
1
580 BK/GN
3200 YE/WH
X250R 25
26
151 BK/WH
4622 GN/WH
548 BK/YE
3200 YE/WH
548 BK/YE
3926 YE/GY
X201 48
49
548 BK/YE
3200 YE/WH
J132
548 BK/YE
3200 YE/WH
X2 48
X3 21
X2 25
29
K20 Engine Control Module
G201A

6852997

Engine Controls Schematics (Engine Data Sensors - Coolant Temperature)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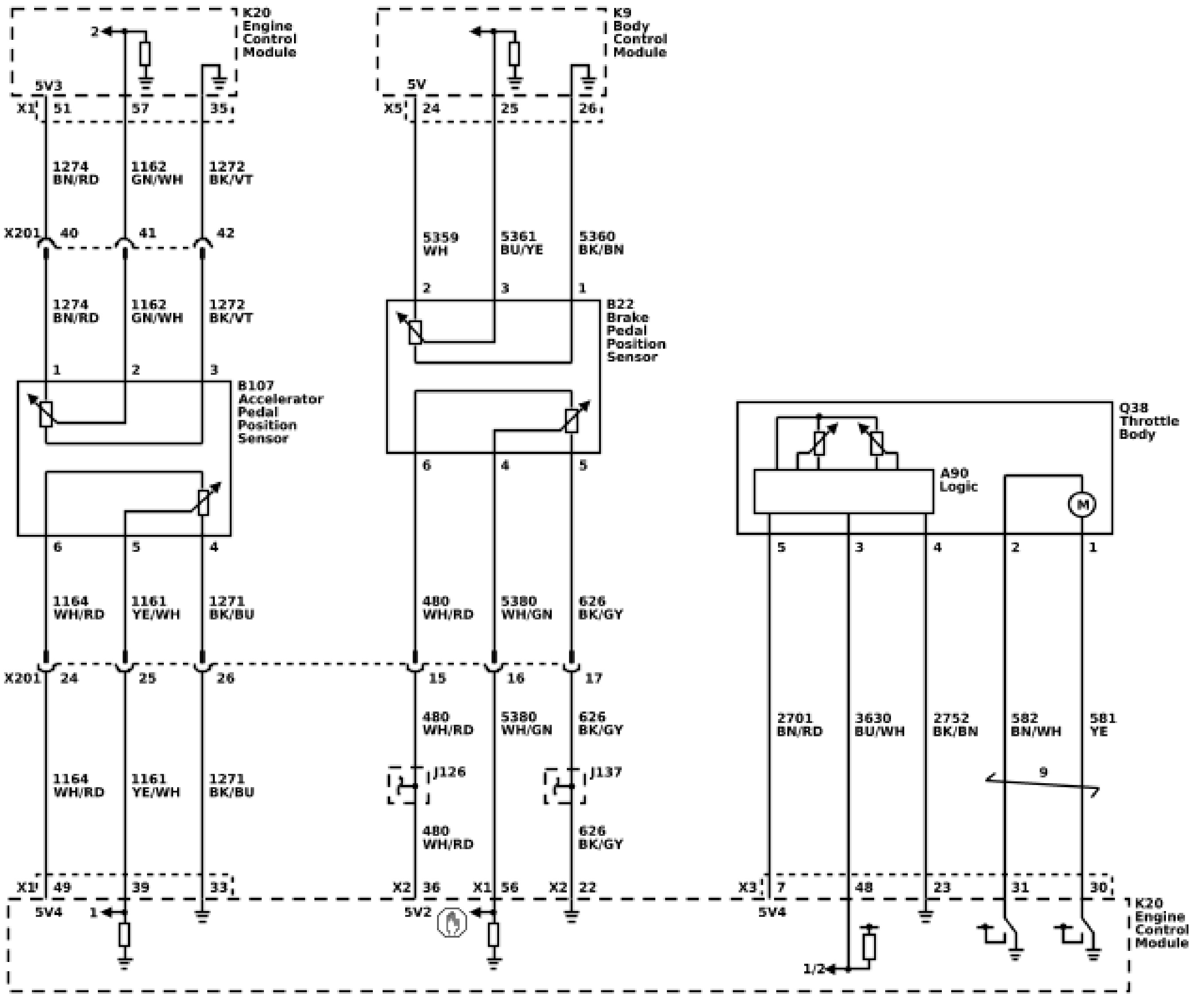
Engine
Control
Module
ECT 2
X3 25
X2 22
ECT 1
X3 24
ECT 5
27
ECT 6
X2 40
X3 21
626
BK/GY
2404
GY/VT
548
BK/YE
J137
J132
2408
YE/BU
626
BK/GY
626
BK/GY
2988
VT
8938
BU/YE
548
BK/YE
2404
GY/VT
548
BK/YE
1
B34B
Engine
Coolant
Temperature
Sensor 2
2
1
B34A
Engine
Coolant
Temperature
Sensor 1
2
1
B34E
Engine
Coolant
Temperature
Sensor 5
2
1
B34F
Engine
Coolant
Temperature
Sensor 6
2

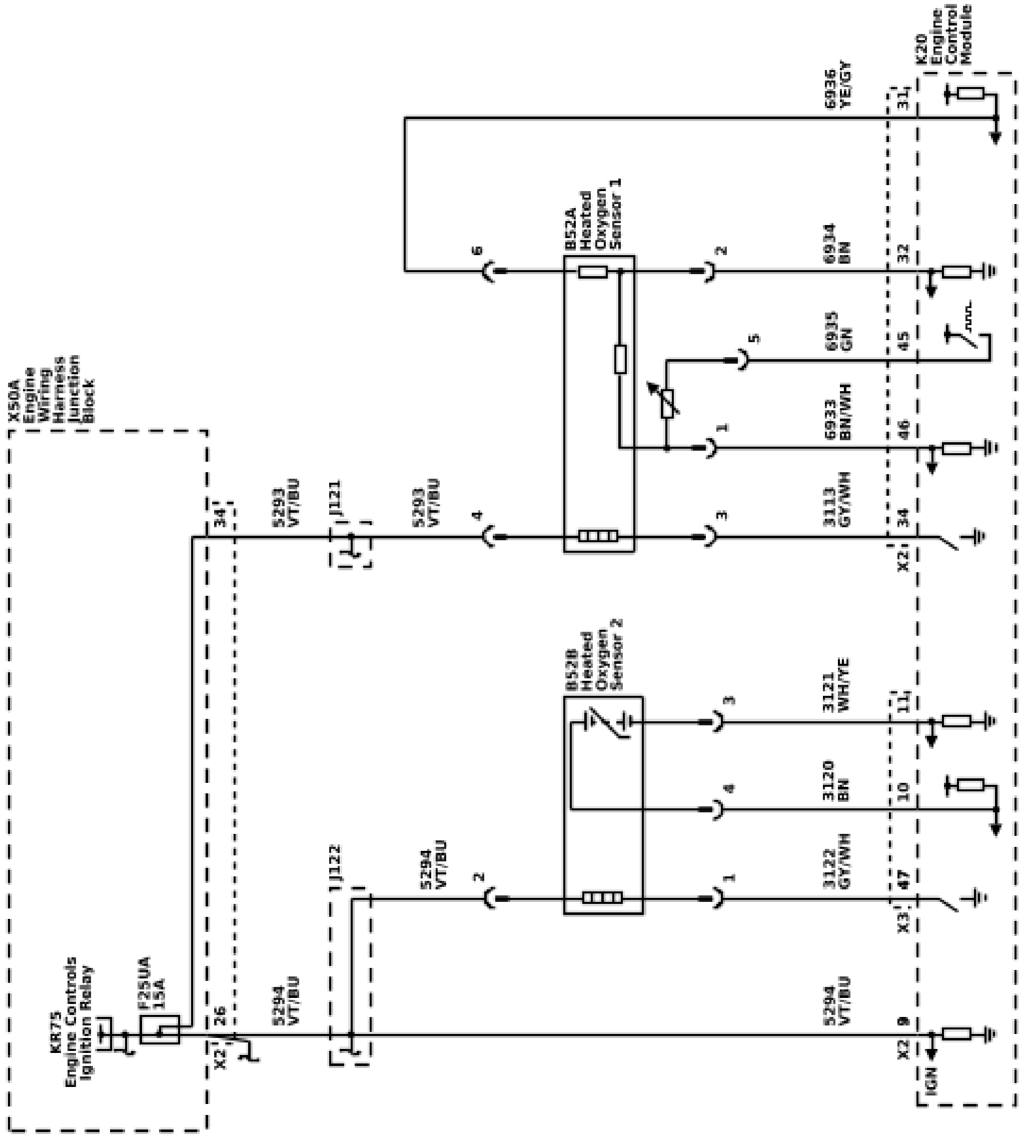
6852998

Engine Controls Schematics (Engine Data Sensors - Throttle Controls and Override)


K20 Engine Control Module
2
5V3
X1 51 57 35
1274 BN/RD
1162 GN/WH
1272 BK/VT
X201 40 41 42
1274 BN/RD
1162 GN/WH
1272 BK/VT
1 2 3
B107 Accelerator Pedal Position Sensor
6 5 4
1164 WH/RD
1161 YE/WH
1271 BK/BU
X201 24 25 26
1164 WH/RD
1161 YE/WH
1271 BK/BU
X1 49 39 33
5V4
1
K9 Body Control Module
5V
X5 24 25 26
5359 WH
5361 BU/YE
5360 BK/BN
2 3 1
B22 Brake Pedal Position Sensor
6 4 5
480 WH/RD
5380 WH/GN
626 BK/GY
15 16 17
480 WH/RD
5380 WH/GN
626 BK/GY
J126
J137
480 WH/RD
626 BK/GY
X2 36
X1 56
X2 22
5V2
Q38 Throttle Body
A90 Logic
M
5 3 4 2 1
2701 BN/RD
3630 BU/WH
2752 BK/BN
582 BN/WH
581 YE
9
X3 7 48 23 31 30
5V4
1/2
K20 Engine Control Module

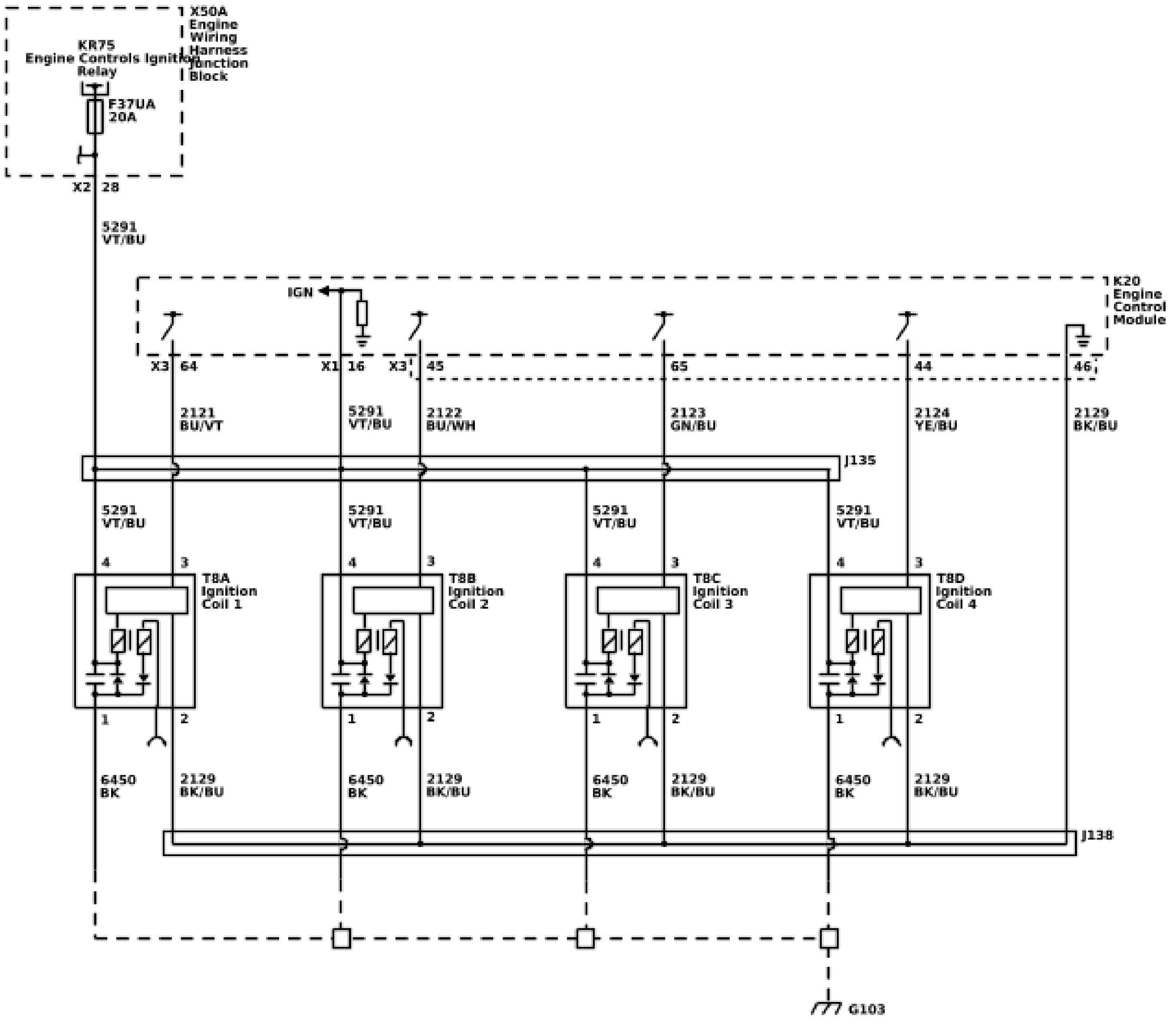
6852999

Engine Controls Schematics (Engine Data Sensors - Oxygen Sensors)


K20 Engine Control Module
6936 YE/GY
31
B52A Heated Oxygen Sensor 1
6
2
6934 BN
32
5
6935 GN
45
X50A Engine Wiring Harness Junction Block
1
6933 BN/WH
46
34
5293 VT/BU
J121
5293 VT/BU
4
3
3113 GY/WH
34
X2
B52B Heated Oxygen Sensor 2
3
3121 WH/YE
11
4
3120 BN
10
J122
5294 VT/BU
2
1
3122 GY/WH
47
X3
KR75 Engine Controls Ignition Relay
F25UA 15A
26
X2
5294 VT/BU
5294 VT/BU
9
X2
IGN

6853000

Engine Controls Schematics (Ignition Controls - Ignition Coils)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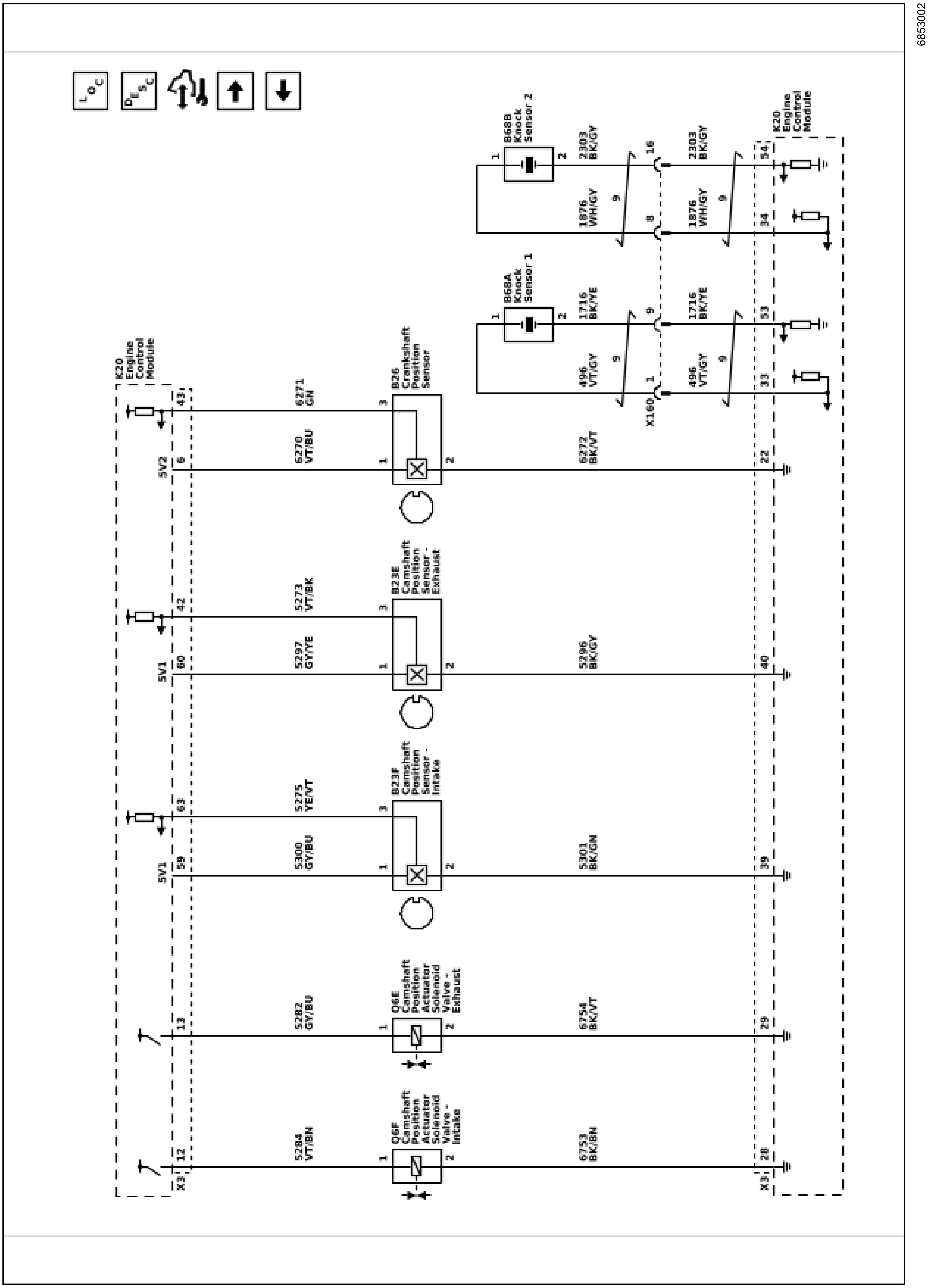
KR75 Engine Controls Ignition Relay
F37UA 20A
X2 28
5291 VT/BU
IGN
K20 Engine Control Module
X3 64
X1 16
X3 45
65
44
46
2121 BU/VT
5291 VT/BU
2122 BU/WH
2123 GN/BU
2124 YE/BU
2129 BK/BU
J135
5291 VT/BU
4
3
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
1
2
6450 BK
2129 BK/BU
J138
G103

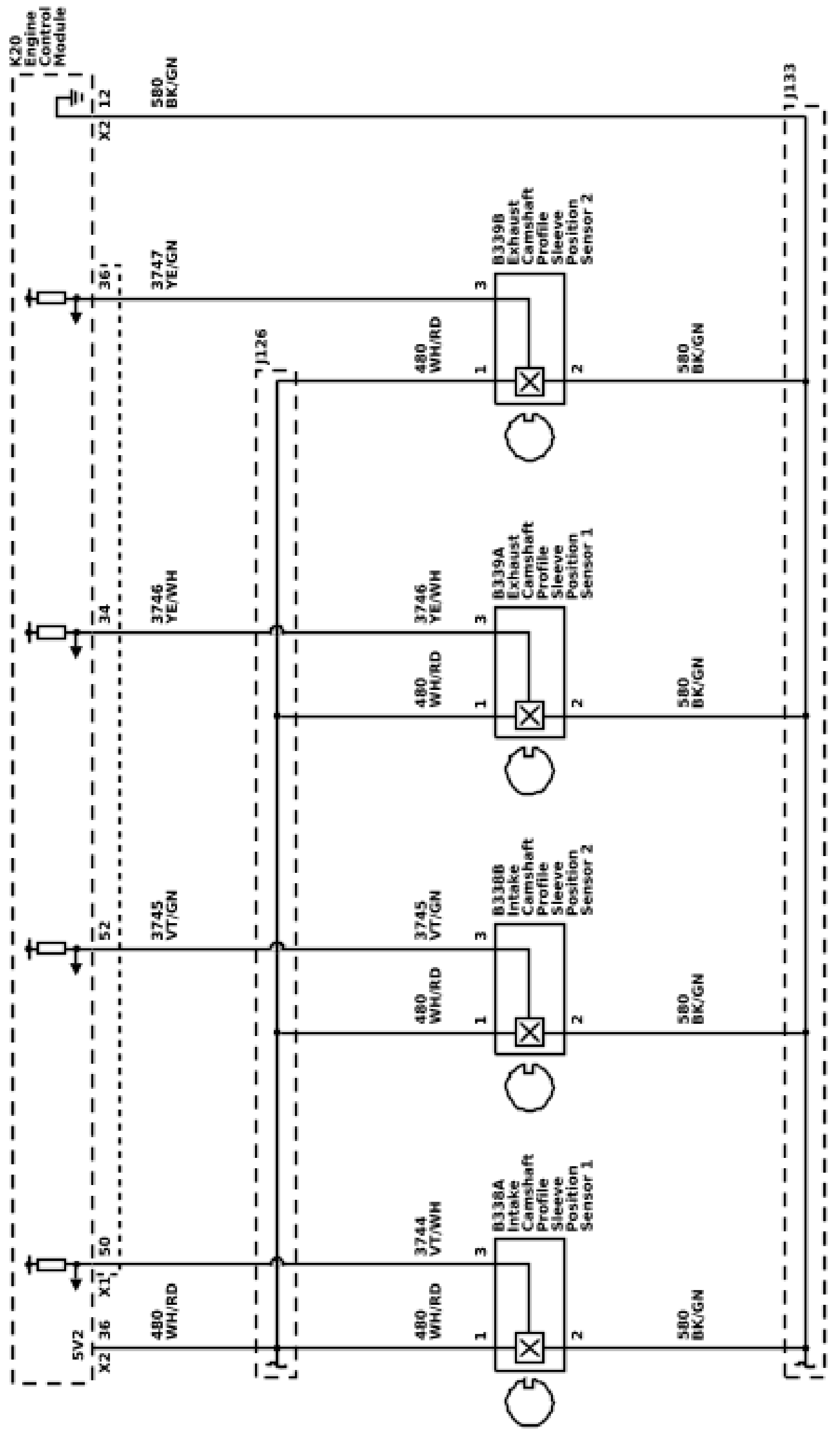
6853001

Engine Controls Schematics (Ignition Controls - Crankshaft Position, Camshaft Position, Knock Sensors and Camshaft Position Actuator)

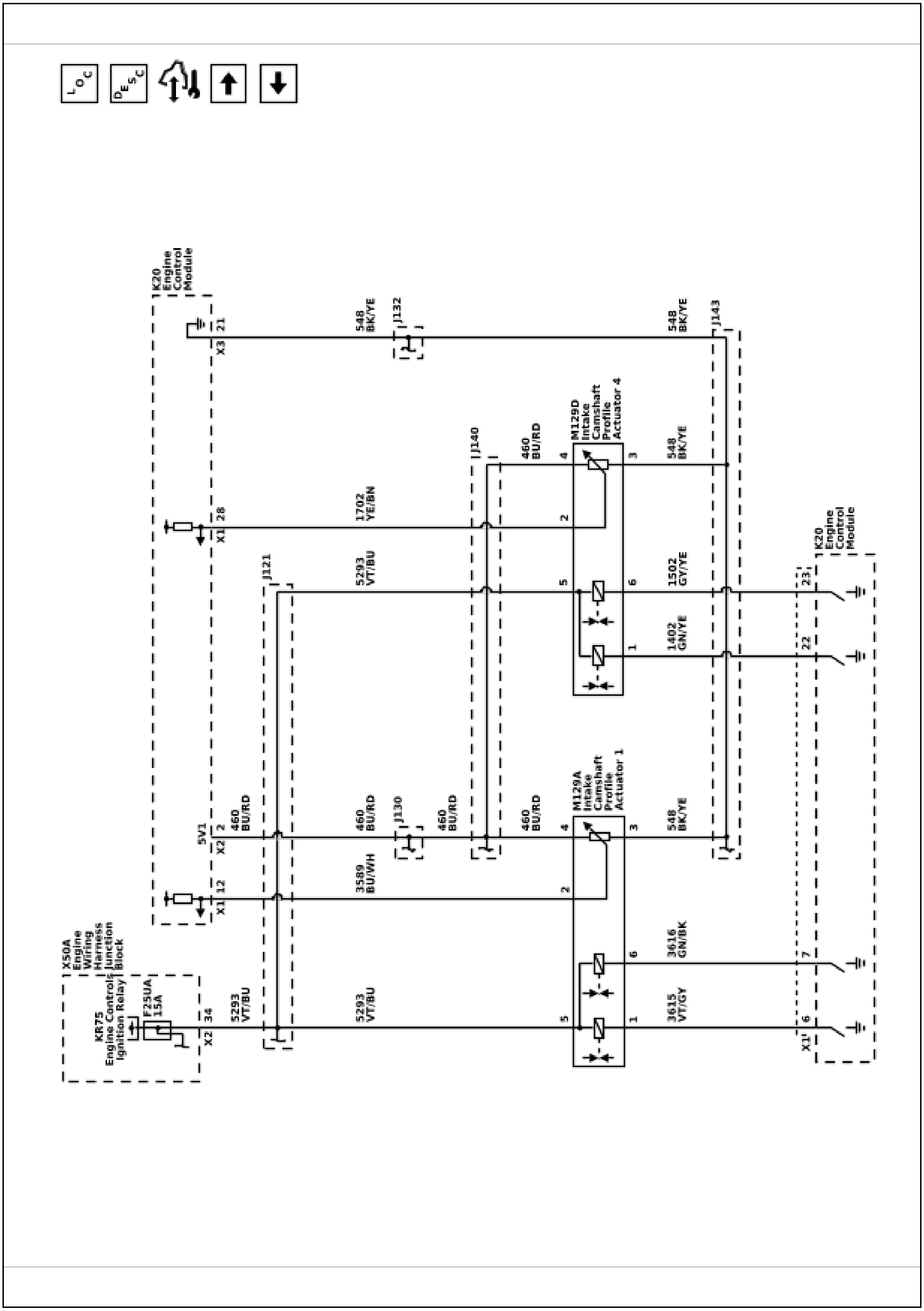

6853002
K20 Engine Control Module
X3
5V2
5V1
6271 GN
6270 VT/BU
6272 BK/VT
5273 VT/BK
5297 GY/YE
5296 BK/GY
5275 YE/VT
5300 GY/BU
5301 BK/GN
5282 GY/BU
6754 BK/VT
5284 VT/BN
6753 BK/BN
B26 Crankshaft Position Sensor
B23E Camshaft Position Sensor - Exhaust
B23F Camshaft Position Sensor - Intake
Q6E Camshaft Position Actuator Solenoid Valve - Exhaust
Q6F Camshaft Position Actuator Solenoid Valve - Intake
B68A Knock Sensor 1
B68B Knock Sensor 2
X160
496 VT/GY
1716 BK/YE
1876 WH/GY
2303 BK/GY
9
43
6
42
60
63
59
13
12
22
40
39
29
28
33
53
34
54
1
2
3
8
16

Engine Controls Schematics (Camshaft Profile Controls - Position Sensors)

6853003


K20
Engine
Control
Module
X2 12
580
BK/GN
J133
36
3747
YE/GN
B339B
Exhaust
Camshaft
Profile
Sleeve
Position
Sensor 2
3
1
2
J126
480
WH/RD
580
BK/GN
34
3746
YE/WH
3746
YE/WH
B339A
Exhaust
Camshaft
Profile
Sleeve
Position
Sensor 1
480
WH/RD
580
BK/GN
52
3745
VT/GN
3745
VT/GN
B338B
Intake
Camshaft
Profile
Sleeve
Position
Sensor 2
480
WH/RD
580
BK/GN
X1 50
3744
VT/WH
B338A
Intake
Camshaft
Profile
Sleeve
Position
Sensor 1
5V2
X2 36
480
WH/RD
480
WH/RD
580
BK/GN

Engine Controls Schematics (Camshaft Profile Controls - Intake Actuators 1 of 2)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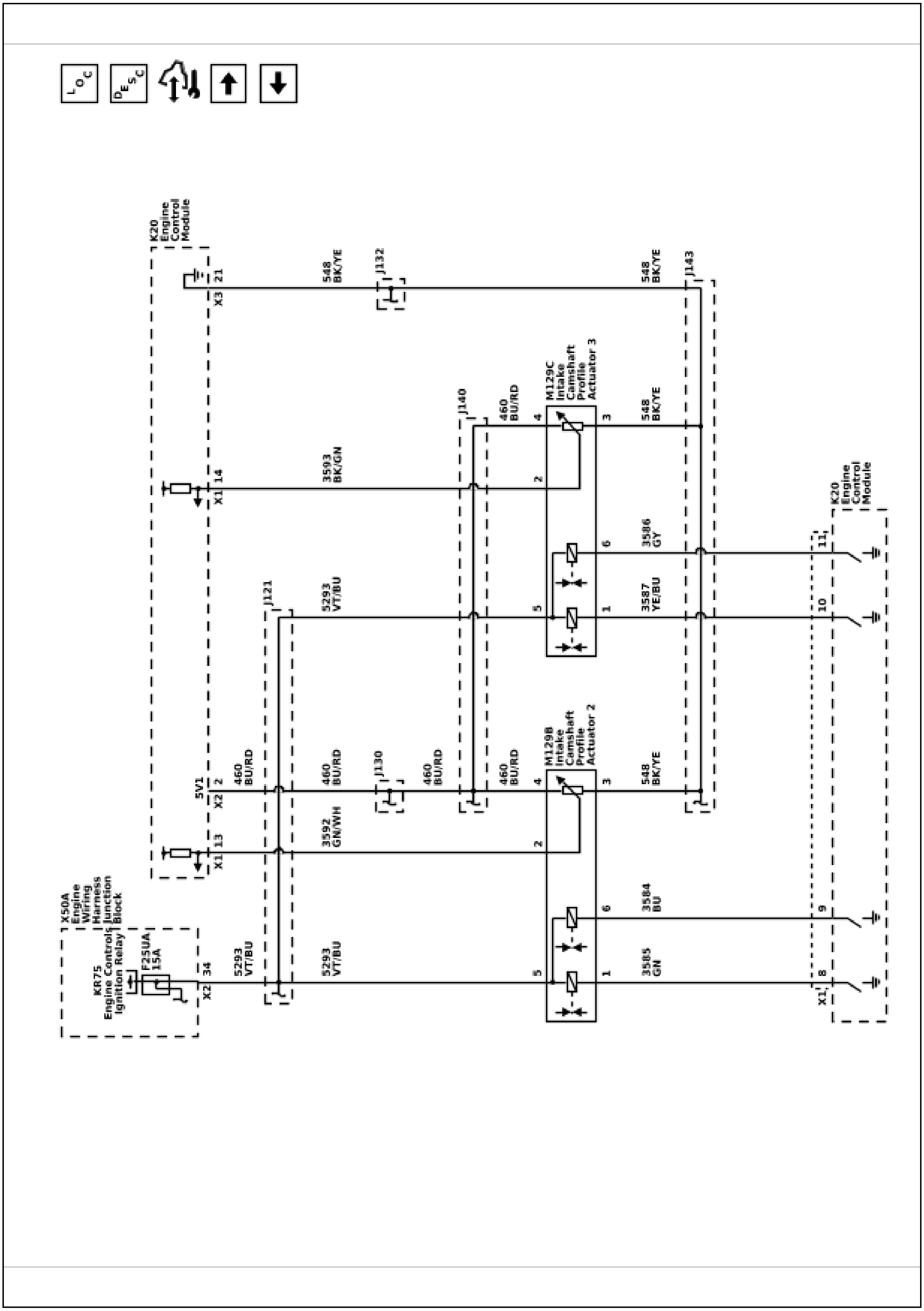
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
X2 34
5293 VT/BU
J121
K20 Engine Control Module
X1 12
X2 2
5V1
460 BU/RD
3589 BU/WH
J130
J140
X1 28
1702 YE/BN
X3 21
548 BK/YE
J132
J143
M129A Intake Camshaft Profile Actuator 1
M129D Intake Camshaft Profile Actuator 4
1 2 3 4 5 6
3615 VT/GY
3616 GN/BK
1402 GN/YE
1502 GY/YE
X1 6 7 22 23

Engine Controls Schematics (Camshaft Profile Controls - Intake Actuators 2 of 2)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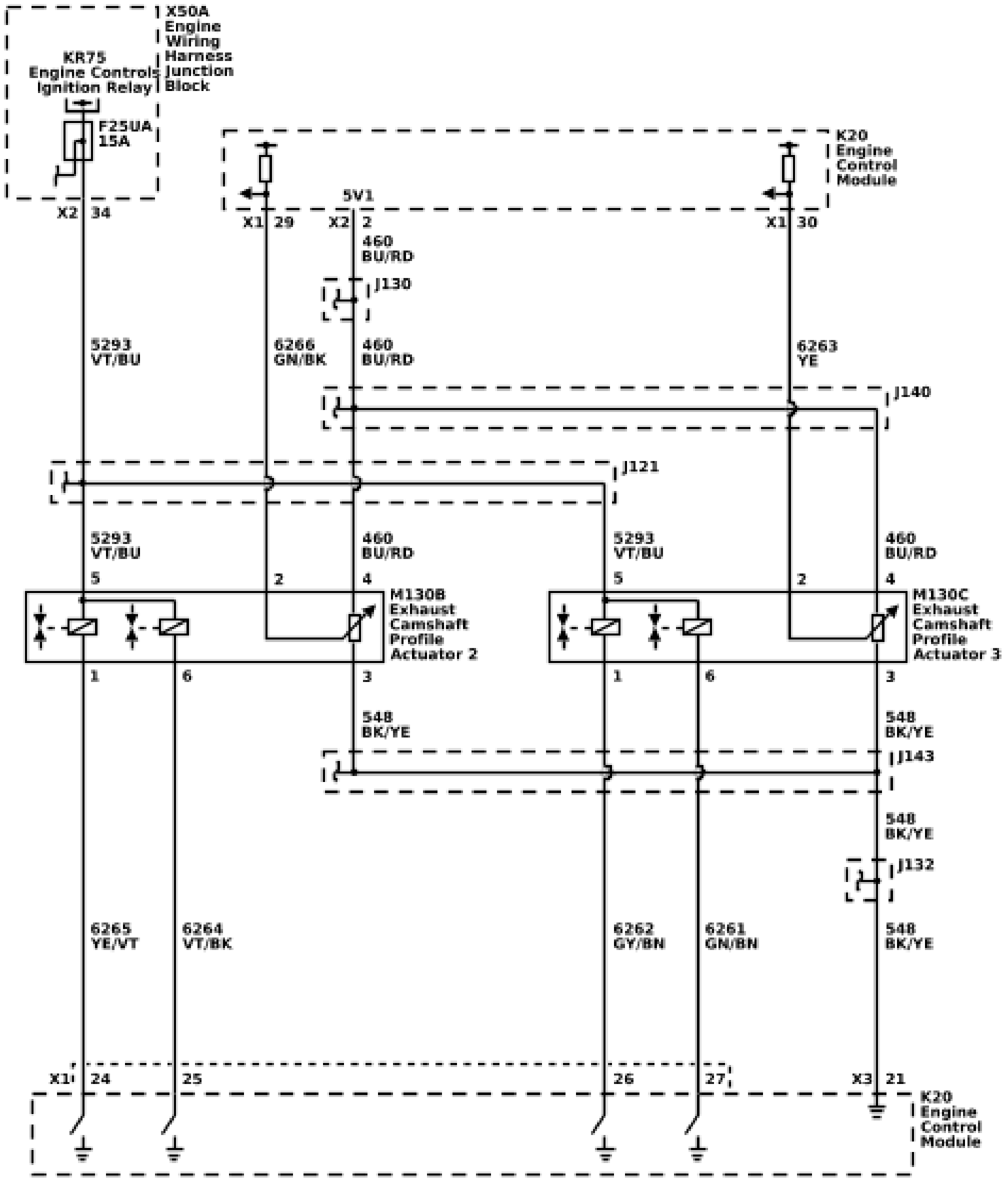
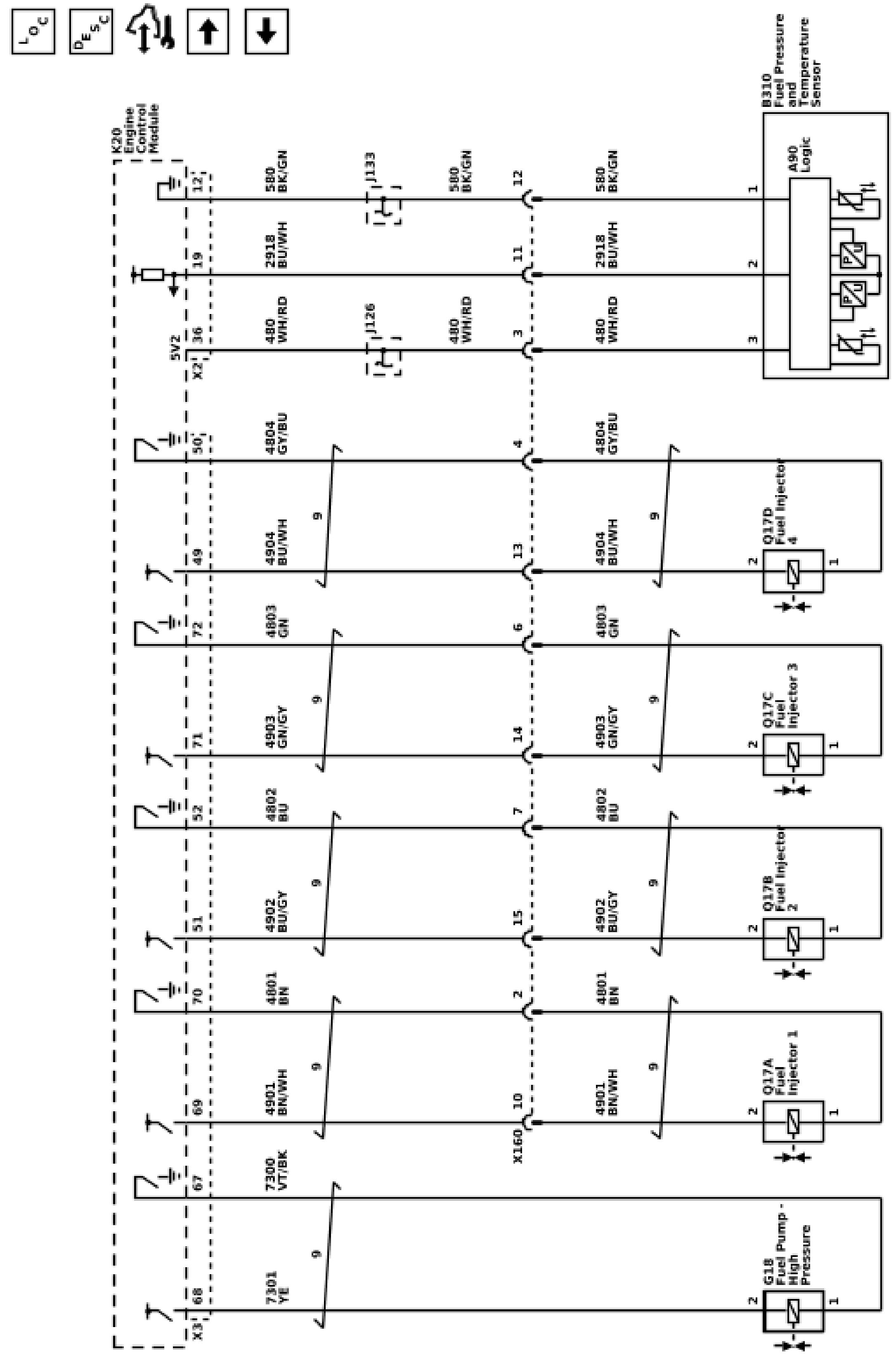
K20 Engine Control Module
X3 21
548 BK/YE
J132
548 BK/YE
J143
X1 14
3593 BK/GN
J140
460 BU/RD
M129C Intake Camshaft Profile Actuator 3
4
2
3
548 BK/YE
6
3586 GY
11
5
1
3587 YE/BU
10
K20 Engine Control Module
J121
5293 VT/BU
5V1
X2 2
460 BU/RD
460 BU/RD
J130
460 BU/RD
460 BU/RD
M129B Intake Camshaft Profile Actuator 2
4
3
548 BK/YE
X1 13
3592 GN/WH
2
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
X2 34
5293 VT/BU
5293 VT/BU
6
3584 BU
9
5
1
3585 GN
X1 8

Engine Controls Schematics (Camshaft Profile Controls - Exhaust Actuators)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
X2 34
5293 VT/BU
K20 Engine Control Module
5V1
X1 29
X2 2
X1 30
460 BU/RD
J130
6266 GN/BK
460 BU/RD
6263 YE
J140
J121
5293 VT/BU
460 BU/RD
5293 VT/BU
460 BU/RD
5
2
4
M130B Exhaust Camshaft Profile Actuator 2
5
2
4
M130C Exhaust Camshaft Profile Actuator 3
1
6
3
1
6
3
548 BK/YE
548 BK/YE
J143
548 BK/YE
J132
548 BK/YE
6265 YE/VT
6264 VT/BK
6262 GY/BN
6261 GN/BN
X1 24
25
26
27
X3 21
K20 Engine Control Module

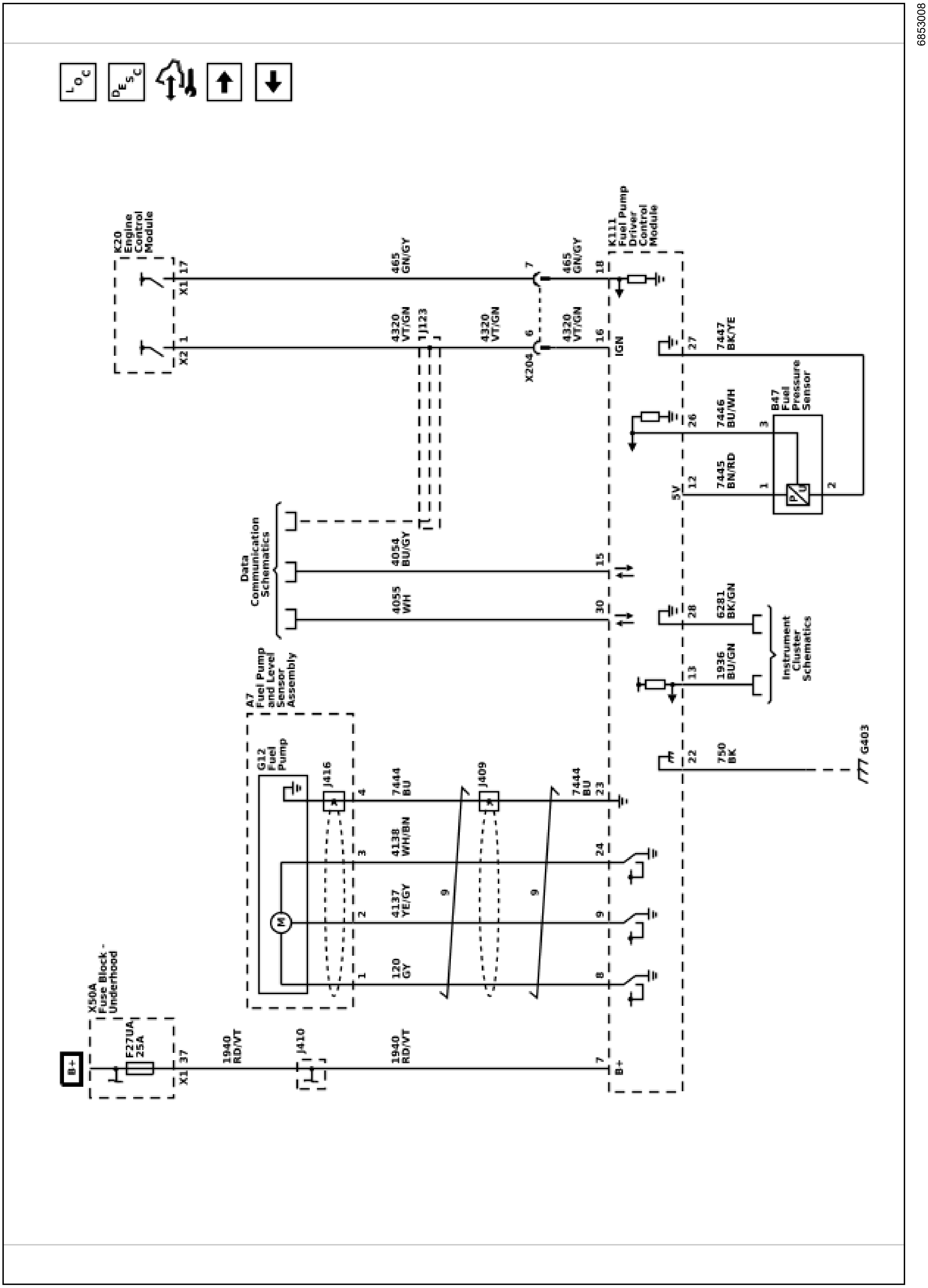
6853006

Engine Controls Schematics (Fuel Controls - Fuel Injectors and Fuel Pressure)

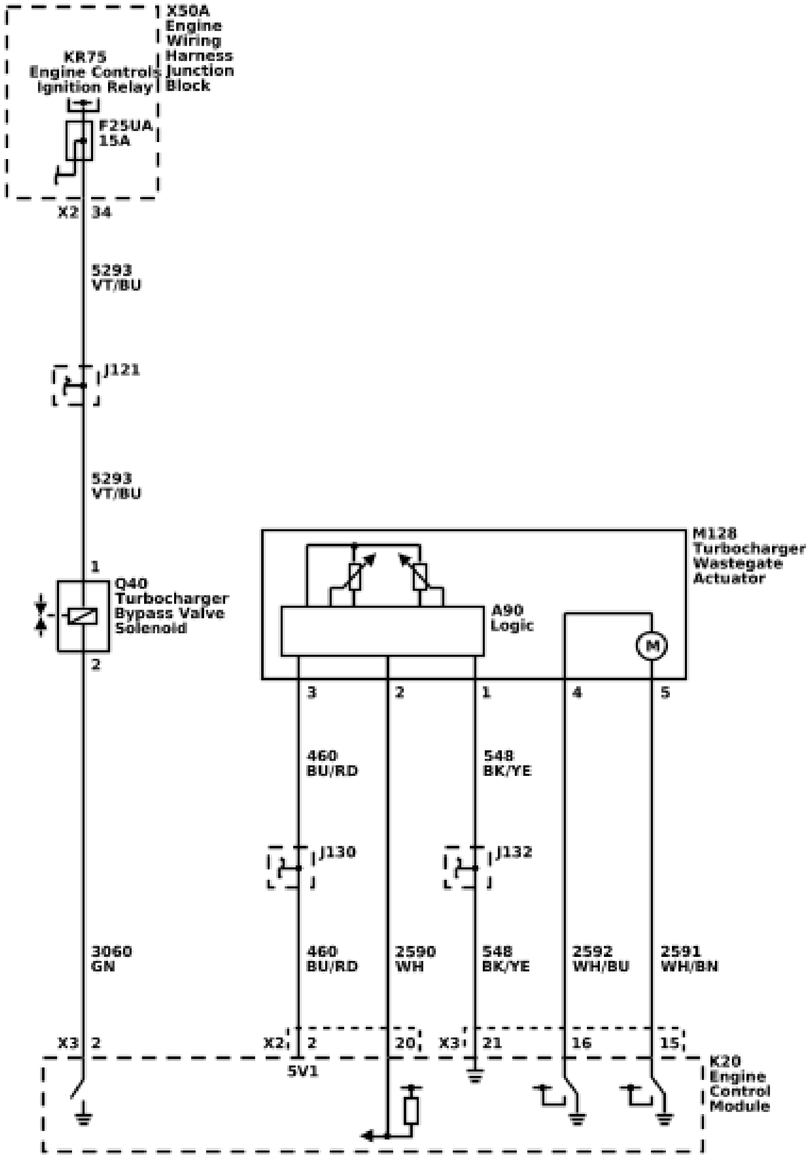


6853007
K20 Engine Control Module
X2
12
19
36
5V2
X3
50
49
72
71
52
51
70
69
67
68
580 BK/GN
2918 BU/WH
480 WH/RD
4804 GY/BU
4904 BU/WH
4803 GN
4903 GN/GY
4802 BU
4902 BU/GY
4801 BN
4901 BN/WH
7300 VT/BK
7301 YE
9
J133
J126
X160
12
11
3
4
13
6
14
7
15
2
10
B310 Fuel Pressure and Temperature Sensor
A90 Logic
1
2
3
Q17D Fuel Injector 4
Q17C Fuel Injector 3
Q17B Fuel Injector 2
Q17A Fuel Injector 1
G18 Fuel Pump - High Pressure

Engine Controls Schematics (Fuel Controls - Fuel Pump Control)

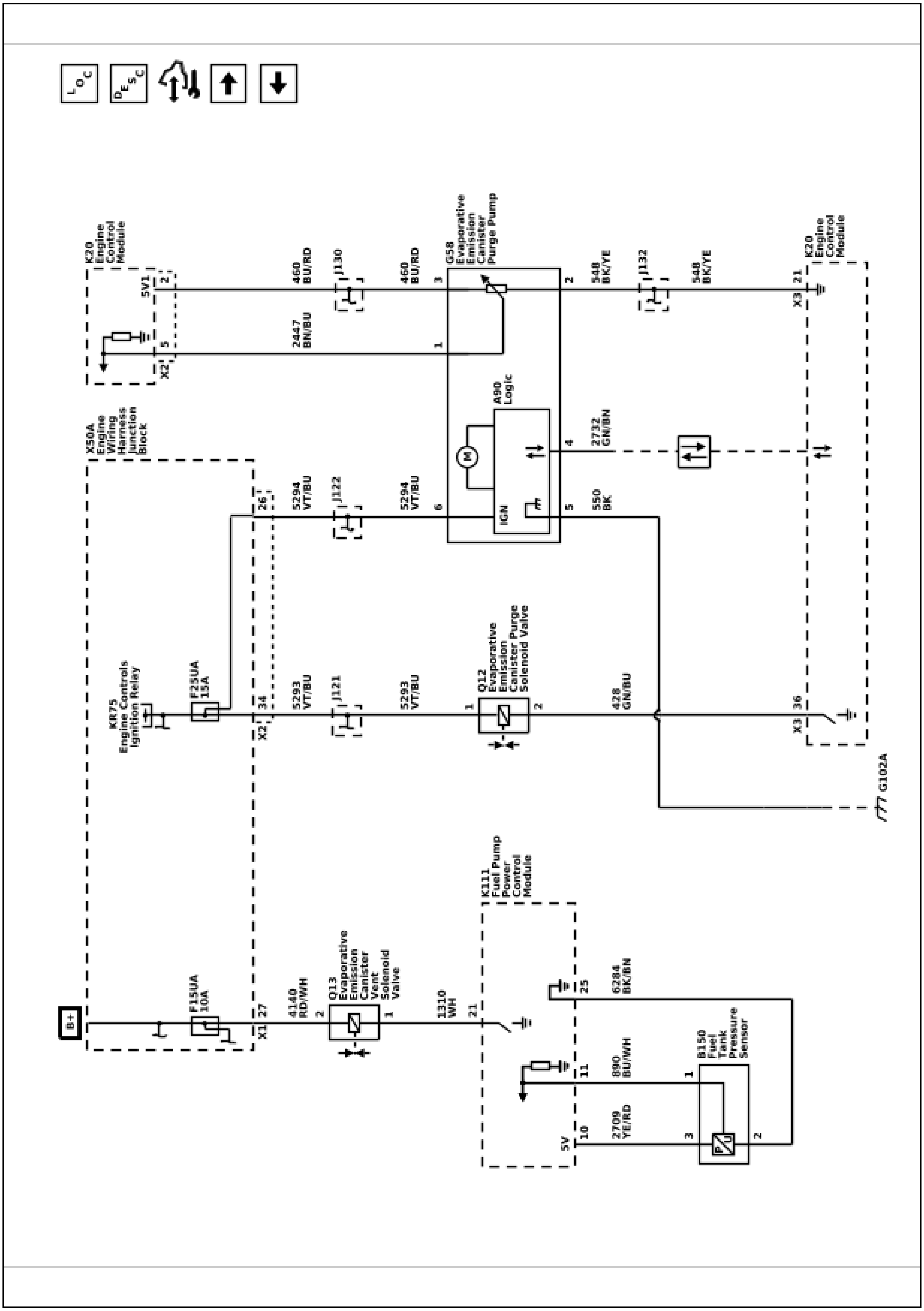

6853008
B+
X50A Fuse Block - Underhood
F27UA 25A
X1 37
1940 RD/VT
J410
1940 RD/VT
7
B+
A7 Fuel Pump and Level Sensor Assembly
G12 Fuel Pump
M
J416
J409
1
120 GY
2
4137 YE/GY
3
4138 WH/BN
4
7444 BU
9
9
8
9
24
7444 BU
23
Data Communication Schematics
4055 WH
30
4054 BU/GY
15
K20 Engine Control Module
X1 17
X2 1
465 GN/GY
4320 VT/GN
J123
4320 VT/GN
X204
7
6
465 GN/GY
4320 VT/GN
18
16
IGN
K111 Fuel Pump Driver Control Module
27
7447 BK/YE
26
7446 BU/WH
5V
12
7445 BN/RD
B47 Fuel Pressure Sensor
3
1
2
P U
28
6281 BK/GN
13
1936 BU/GN
Instrument Cluster Schematics
22
750 BK
G403

Engine Controls Schematics (Fuel Controls - Turbocharger Controls)


X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Controls
Ignition Relay
F25UA
15A
X2 34
5293
VT/BU
J121
5293
VT/BU
1
Q40
Turbocharger
Bypass Valve
Solenoid
2
3060
GN
X3 2
M128
Turbocharger
Wastegate
Actuator
A90
Logic
M
3
2
1
4
5
460
BU/RD
548
BK/YE
J130
J132
460
BU/RD
2590
WH
548
BK/YE
2592
WH/BU
2591
WH/BN
X2 2
20
X3 21
16
15
5V1
K20
Engine
Control
Module

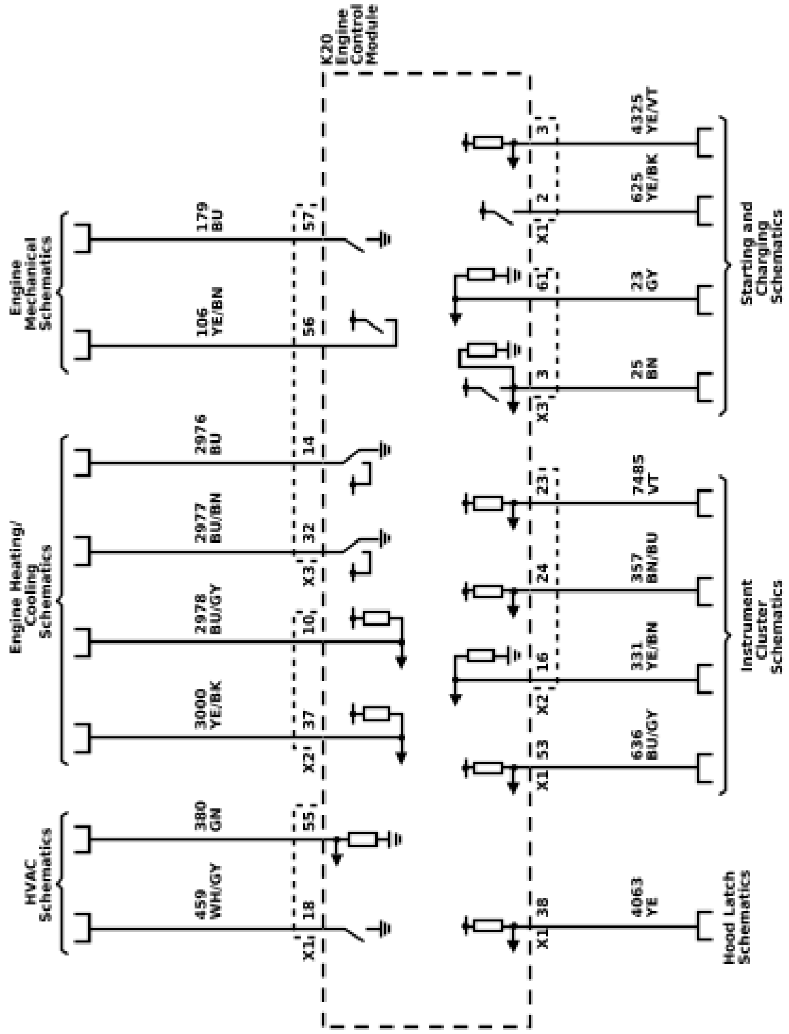
6853009

Engine Controls Schematics (Fuel Controls - Evaporative Emission Controls)


6853010
LOC
DESC
B+
F15UA 10A
X1 27
4140 RD/WH
Q13 Evaporative Emission Canister Vent Solenoid Valve
2
1
1310 WH
21
K111 Fuel Pump Power Control Module
25
6284 BK/BN
11
890 BU/WH
5V
10
2709 YE/RD
B150 Fuel Tank Pressure Sensor
1
3
2
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
X2 34
5293 VT/BU
J121
5293 VT/BU
Q12 Evaporative Emission Canister Purge Solenoid Valve
1
2
428 GN/BU
X3 36
G102A
26
5294 VT/BU
J122
5294 VT/BU
6
IGN
M
A90 Logic
5
550 BK
4
2732 GN/BN
K20 Engine Control Module
X2 5
5V1
2
2447 BN/BU
1
460 BU/RD
J130
460 BU/RD
3
G58 Evaporative Emission Canister Purge Pump
2
548 BK/YE
J132
548 BK/YE
X3 21
K20 Engine Control Module

Engine Controls Schematics (Controlled/Monitored Subsystem References)

6853011


K20 Engine Control Module
HVAC Schematics
459 WH/GY
X1 18
380 GN
55
Engine Heating/ Cooling Schematics
3000 YE/BK
X2 37
2978 BU/GY
10
2977 BU/BN
X3 32
2976 BU
14
Engine Mechanical Schematics
106 YE/BN
56
179 BU
57
Hood Latch Schematics
4063 YE
X1 38
Instrument Cluster Schematics
636 BU/GY
X1 53
331 YE/BN
X2 16
357 BN/BU
24
7485 VT
23
Starting and Charging Schematics
25 BN
X3 3
23 GY
61
625 YE/BK
X1 2
4325 YE/VT
3

Description and Operation

Catalytic Converter Description and Operation

Three-Way Catalytic Converter

A three-way catalyst is designed to reduce the levels of hydrocarbons, carbon monoxide and nitrogen oxide.

Catalytic Converter

Catalyst Conversion

The catalyst within the converter promotes a chemical reaction, which oxidizes the hydrocarbons and the carbon monoxide that are present in the exhaust gas. This process converts the hydrocarbons and the carbon monoxide into water vapor and carbon dioxide, and reduces the nitrogen oxide, converting the nitrogen oxide into nitrogen.

Oxygen Storage

The catalyst stores oxygen. The engine control module (ECM) monitors this process by using heated oxygen sensors that are in the exhaust stream before and after the catalyst. The heated oxygen sensors produces an output signal that the ECM uses to calculate the oxygen storage capacity of the catalyst. This indicates the ability of the catalyst to convert the exhaust emissions efficiently. The ECM monitors the efficiency of the catalyst by monitoring the heated oxygen sensors during an off-idle, deceleration fuel cut-off event. When the catalyst is functioning properly, the post catalyst heated oxygen sensors response to the fuel conditions during the deceleration fuel cut-off event is slow compared to the response of the pre catalyst heated oxygen sensors. When the post heated oxygen sensors response is near that of the pre heated oxygen sensors, the oxygen storage capability and efficiency of the catalyst may be degraded below an acceptable threshold.

Cold Start Strategy

The catalyst must be warmed to efficiently reduce the emissions. The cold start strategy is to reduce the amount of time it takes to warm the catalyst. During a cold start, the engine spark timing and fuel injection are altered to allow the catalyst to warm quickly. The ECM monitors the following to build an exhaust energy model:

- Engine airflow
- Engine coolant temperature
- Engine idle speed
- Engine run time
- Fuel Injection
- Spark advance

The actual model is then compared to the expected exhaust energy model.

Fuel Trim Bias

Fuel trim bias is used to keep the post catalyst air/fuel ratio within a predetermined range. This allows optimal catalyst efficiency under various operating conditions. The ECM constantly monitors how lean or rich the fuel trim bias is commanded, to determine if the fuel trim bias is greater than a calibrated amount.

Heated Oxygen Sensor Description and Operation

The engine control module (ECM) controls a closed loop air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. The ECM monitors the heated oxygen sensor (HO2S) signal and adjusts the fuel delivery based on the signal while in closed loop operation. The short term fuel trim values change rapidly in response to the HO2S signal. These changes fine tune the engine fueling. The long term fuel trim values change in response to trends in the short term fuel trim. The long term fuel trim makes coarse adjustments to fueling in order to re-center and restore control to short term fuel trim.

Heated Oxygen Sensor

When the engine is started, the ECM operates in an Open Loop mode, ignoring the HO2S signal voltage while calculating the air-to-fuel ratio. While the engine runs, the HO2S heats up and begins to generate a voltage within a range of 0–1,000 mV. Once sufficient HO2S voltage fluctuation is observed by the ECM, Closed Loop mode is entered. The ECM uses the HO2S voltage to determine the air-to-fuel ratio. An HO2S voltage that increases toward 1,000 mV indicates a rich fuel mixture. An HO2S voltage that decreases toward 0 mV indicates a lean fuel mixture.

Heated oxygen sensors are used for fuel control and post catalyst monitoring. Each HO2S compares the oxygen content of the surrounding air with the oxygen content in the exhaust stream. The HO2S must reach operating temperature to provide an accurate voltage signal. A heating element inside the HO2S minimizes the time required for the sensor to reach operating temperature. This allows the system to enter Closed Loop earlier and the ECM to calculate the air-to-fuel ratio sooner. Voltage is provided to the heater by an ignition voltage circuit through a fuse. With the engine running, ground is provided to the heater by the HO2S heater low control circuit through a low side driver within the ECM. The ECM uses pulse width modulation (PWM) to control the HO2S heater operation to maintain a specific HO2S operating temperature range.

Wide Band Heated Oxygen Sensor

The wide band heated oxygen sensor (HO2S) measures the amount of oxygen in the exhaust system and provides more information than the switching style HO2S. The wide band sensor consists of an oxygen sensing cell, an oxygen pumping cell, and a heater. The exhaust gas sample passes through a diffusion gap between the sensing cell and the pumping cell. An electronic circuit within the ECM controls the pump current through the oxygen pumping cell in order to maintain a constant voltage in the oxygen sensing cell. The ECM monitors the voltage variation in the sensing cell and attempts to keep the voltage constant by increasing or decreasing the amount of current flow, or oxygen ion flow, from the pumping cell. By measuring the amount of current required to maintain the voltage in the sensing cell, the ECM can determine the concentration of oxygen in the exhaust. The HO2S pumping current is displayed as a lambda value. A lambda value of 1 is equal to a stoichiometric air fuel ratio of 14.7:1. Under normal operating conditions, the lambda value will remain around 1. When the fuel system is lean, the oxygen level will be high and the lambda signal will be high or more than 1. When the fuel system is rich, the oxygen level will be low, and the lambda signal will be low or less than 1. The ECM uses this information to maintain the correct air/fuel ratio. If the ECM detects that the HO2S signal is out of range a DTC will set.

The heating element inside each HO2S heats the sensor to bring it up to operating conditions faster. This allows the system to enter Closed Loop mode earlier and the ECM to calculate the air-to-fuel ratio sooner.

Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

Monitor	Diesel	Gasoline
Boost System Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Fuel System Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Misfire Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared	X	X

I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.

- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

Permanent DTCs

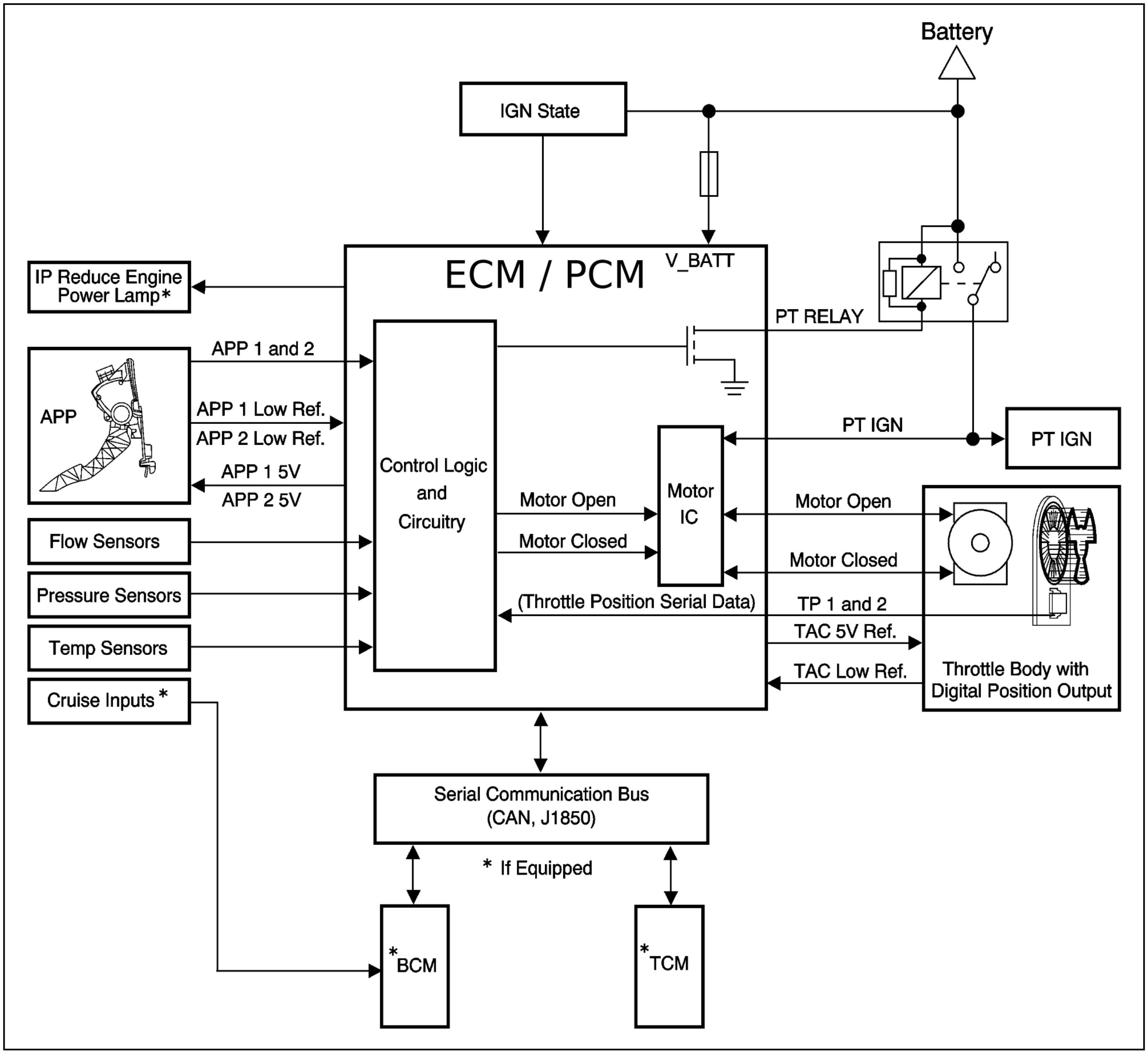
Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.
- If the controller is programmed, all Permanent DTCs are cleared.

Throttle Actuator Control (TAC) System Description


Battery
IGN State
ECM / PCM
V_BATT
IP Reduce Engine Power Lamp*
APP 1 and 2
APP
APP 1 Low Ref.
APP 2 Low Ref.
APP 1 5V
APP 2 5V
PT RELAY
PT IGN
PT IGN
Control Logic and Circuitry
Motor IC
Motor Open
Motor Closed
Motor Open
Motor Closed
Flow Sensors
Pressure Sensors
Temp Sensors
Cruise Inputs *
(Throttle Position Serial Data)
TP 1 and 2
TAC 5V Ref.
TAC Low Ref.
Throttle Body with Digital Position Output
Serial Communication Bus (CAN, J1850)
* If Equipped
*BCM
*TCM

2530982

The engine control module (ECM) is the control center for the throttle actuator control (TAC) system. The ECM determines the driver's intent based on input from the accelerator pedal position sensors, then calculates the appropriate throttle response based on the throttle position sensors. The ECM achieves throttle positioning by providing a pulse width modulated voltage to the throttle actuator motor. The throttle blade is spring loaded in both directions, and the default position is slightly open.

The throttle body actuator contains a contact-less inductive blade position sensing element that is managed by a customized integrated circuit. The throttle body actuator position sensor is mounted within the throttle body and is not serviceable. The ECM supplies the throttle body with a 5 V reference circuit, a low reference circuit, an H-bridge motor directional control circuit, and an asynchronous signal/serial data circuit. Asynchronous means communication is only going from the throttle body to the ECM. The throttle body cannot receive data from the ECM over the signal/serial data circuit. The throttle body actuator position sensor provides a signal that changes relative to throttle blade angle. The customized integrated circuit translates the signal based position information into serial data using the Society of Automotive

Engineers (SAE) J2716 Single Edge Nibble Transmission (SENT) protocol. The throttle body actuator position sensor information is transmitted between the throttle body and the ECM on the signal/serial data circuit. The ECM decodes the serial data signal and the throttle position information is displayed on the scan tool.

Modes Of Operation

Normal Mode

During the operation of the TAC system, several modes, or functions, are considered normal. The following modes may be entered during normal operations:

- Minimum pedal value—At key-up, the ECM updates the learned minimum pedal value.
- Minimum throttle position values—At key-up, the ECM updates the learned minimum throttle position value. In order to learn the minimum throttle position value, the throttle blade is moved to the closed position.
- Ice break mode—If the throttle blade is not able to reach a predetermined minimum throttle position, the ice break mode is entered. During the ice break mode, the ECM commands the maximum pulse width several times to the throttle actuator motor in the closing direction.
- Battery saver mode—After a predetermined time without engine speed, the ECM commands the battery saver mode. During the battery saver mode, the TAC system removes the voltage from the motor control circuits, which removes the current draw used to maintain the idle position and allows the throttle to return to the spring loaded default position.

Reduced Engine Power Mode

When the ECM detects a condition with the TAC system, the ECM may enter a reduced engine power mode. Reduced engine power may cause one or more of the following conditions:

- Acceleration limiting—The ECM will continue to use the accelerator pedal for throttle control, however, the vehicle acceleration is limited.
- Limited throttle mode—The ECM will continue to use the accelerator pedal for throttle control, however, the maximum throttle opening is limited.
- Throttle default mode—The ECM will turn OFF the throttle actuator motor and the throttle will return to the spring loaded default position.
- Forced idle mode—The ECM will perform the actions listed below:
  - Limit engine speed to the idle position
  - Ignore the accelerator pedal input.

Engine Shutdown Mode

There are 4 reasons the ECM commands engine shutdown. All 4 reasons involve a throttle that has been commanded to default position – Reduced Engine Power. Default Throttle is latched for the key-cycle, disabling the throttle motor and letting the spring return the throttle to its default position. Default Throttle by itself does not cause a commanded shutdown. Shutdown will only occur with Default Throttle and another issue. A throttle is commanded to Default Throttle when any of the following occurs:

- SENT Sensor Communication Faults — P16A0–P16A2, U0606, or U0607
- Performance Faults — P0068, P2101, or P2176
- Sensor Reference Voltage Fault — P06A3
- Internal Sensor Faults — P0122, P0123, P0222, P0223, or P2135

The ECM commands engine shutdown when any of the following occurs:

- Default Throttle & Catalyst Temperature to high — In order to idle in Default Throttle the spark is often retarded quite a bit, dumping a lot of heat into the catalyst.
- Default Throttle & P2119 — The throttle sensors detect that the throttle position is higher than default position and throttle hasn’t safely returned to default position.
- Default Throttle & P16F3 or P0606 — The calibration does not trust the ECM to determine if the throttle has safely returned to default position.
- P0068 and any SENT Communication Fault, Reference Voltage Fault, or any of the 5 Sensor Faults — The ECM detects excess air flow based on expected default throttle position indicating the throttle position is higher than the default throttle position. The calibration does not trust the faulted throttle sensors to determine if the throttle has safely returned to default position.

Throttle/Idle Learn or Throttle Body Idle Air Flow Compensation Reset

The ECM learns the airflow through the throttle body to ensure the correct idle. The learned airflow values are stored within the ECM. These values are learned to adjust for production variation and will continuously learn during the life of the vehicle to compensate for reduced airflow due to throttle body coking. Anytime the throttle body airflow rate changes, for example due to cleaning or replacing, the values must be relearned.

An engine that had a heavily coked throttle body that has been cleaned or replaced may take several drive cycles to unlearn the coking. To accelerate the process, the scan tool has the ability to reset the learned value back to zero. A new ECM will also have values set to zero. Cleaning the throttle body when the ECM is replaced can reduce the time it takes for the ECM to relearn the minimum idle speed.

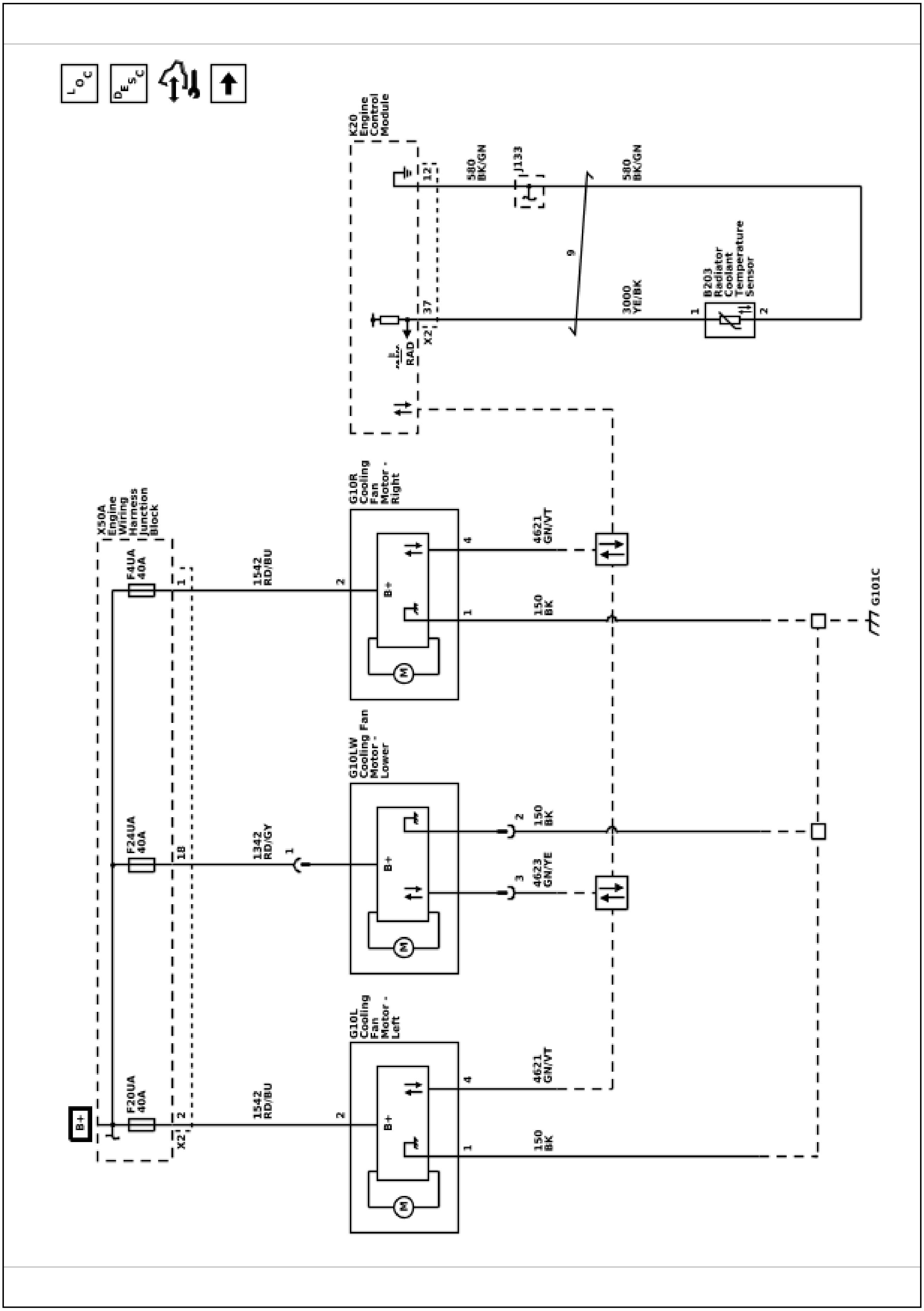
The idle may be unstable or a DTC may set if the learned values do not match the actual airflow.

A un-metered air leak in the induction system or a small vacuum leak may not set a DTC. If the condition goes undetected, the ECM may learn an incorrect Throttle Body Idle Airflow Compensation value over time. The incorrectly learned value may cause various symptoms to occur such as rough or unstable idle speeds, and/or engine stall. If this condition is detected and repaired it will be necessary to perform the Throttle/Idle Learn or Throttle Body Idle Air Flow Compensation Reset procedure to ensure any symptoms are corrected.

Engine Heating and Cooling

Schematic and Routing Diagrams

Engine Heating/Cooling Schematics (Engine Cooling Fans)


L O C
D E S C
K20 Engine Control Module
12
580 BK/GN
J133
580 BK/GN
9
37
X2
RAD
3000 YE/BK
1
B203 Radiator Coolant Temperature Sensor
2
X50A Engine Wiring Harness Junction Block
F4UA 40A
1
1542 RD/BU
2
G10R Cooling Fan Motor - Right
B+
M
4
4621 GN/VT
1
150 BK
G101C
G10LW Cooling Fan Motor - Lower
F24UA 40A
18
1342 RD/GY
1
B+
M
2
150 BK
3
4623 GN/YE
G10L Cooling Fan Motor - Left
B+
F20UA 40A
2
X2
1542 RD/BU
2
B+
M
4
4621 GN/VT
1
150 BK

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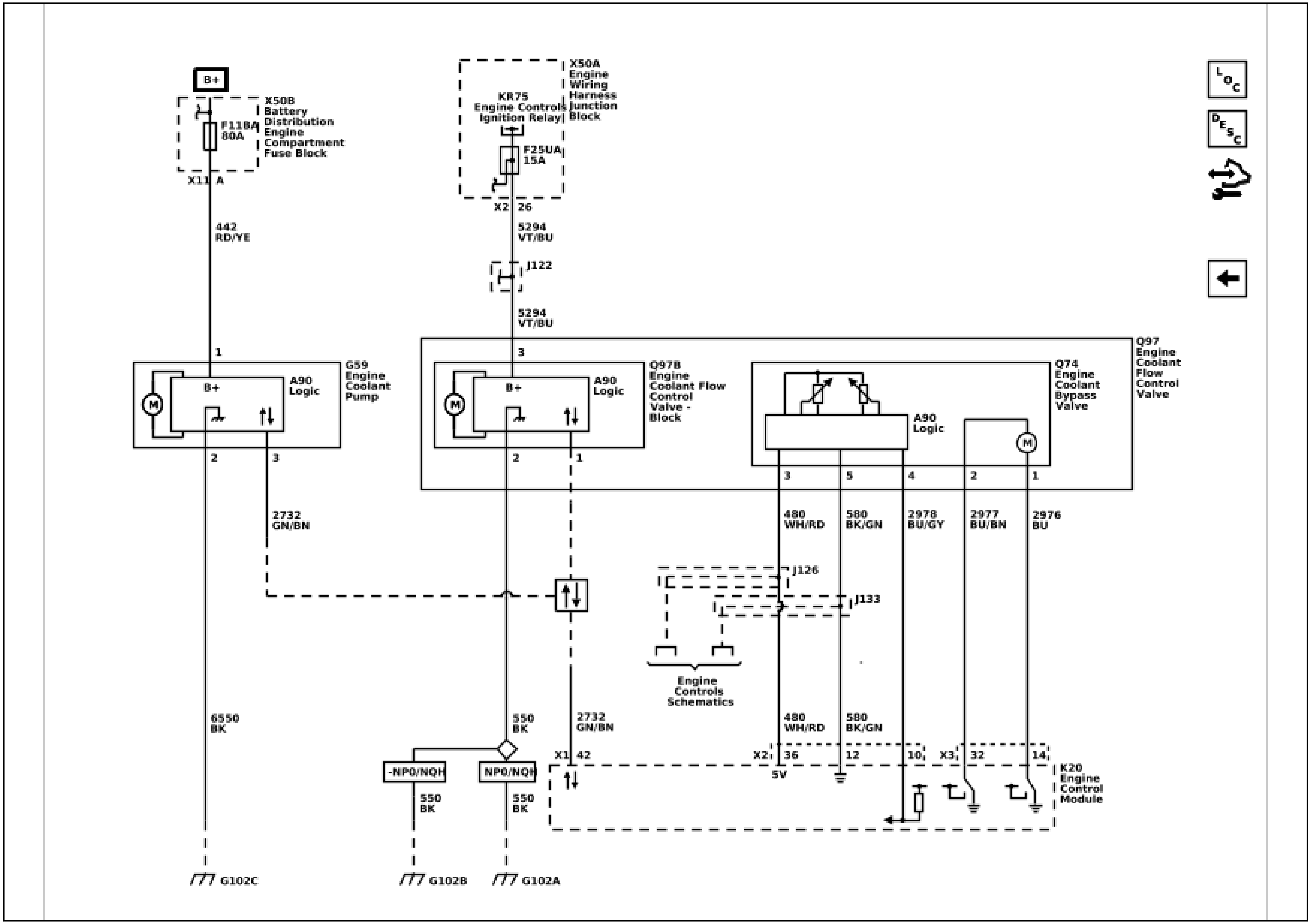
Engine Heating/Cooling Schematics (Coolant Circulation)


B+
X50B Battery Distribution Engine Compartment Fuse Block
F118A 80A
X11 A
442 RD/YE
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F25UA 15A
X2 26
5294 VT/BU
J122
5294 VT/BU
G59 Engine Coolant Pump
A90 Logic
B+
M
1
2
3
2732 GN/BN
6550 BK
Q97 Engine Coolant Flow Control Valve
Q97B Engine Coolant Flow Control Valve - Block
A90 Logic
B+
M
3
2
1
550 BK
-NP0/NQH
NP0/NQH
550 BK
550 BK
G102C
G102B
G102A
2732 GN/BN
X1 42
Q74 Engine Coolant Bypass Valve
A90 Logic
M
3
5
4
2
1
480 WH/RD
580 BK/GN
2978 BU/GY
2977 BU/BN
2976 BU
J126
J133
Engine Controls Schematics
480 WH/RD
580 BK/GN
X2 36
12
10
X3 32
14
5V
K20 Engine Control Module

6853013

Description and Operation

Cooling Fan Description and Operation

Cooling Fan Control

The engine cooling fan system is composed of 2 electric LIN (Local Interconnect Network) based cooling fans and 1 control module. The engine control module (ECM) controls the fan speed by sending a pulse width modulated (PWM) signal to the cooling fan control modules over one serial data circuit (LIN Bus01). The cooling fan control module varies the voltage drop across the cooling fan motors in relation to the pulse width modulated signal, which allows the cooling fans to operate at variable speeds.

Each cooling fan is specifically addressed with in the system. If the cooling fans are not connected to their specific connector, the fans will operate with out a DTC, but there will be noise or performance issues that will occur.

The cooling fan speed is effected by many different conditions and the ECM will adjust the duty cycle from 0–100 percent based on cooling system requirements. The scan tool output control is only capable of operating the cooling fan increments, between 10–90 percent. 90 percent is considered high speed fan. When multiple cooling fan speed requests are received, the ECM operates the fan at the highest of speed requests. The ECM commands the fans ON under the following conditions:

- The engine coolant temperature is warmer than a predetermined temperature.
- The engine oil temperature is warmer than a predetermined temperature.
- The A/C pressure reaches a predetermined pressure.
- If the engine coolant temperature at key-off is warmer than a predetermined value, or the A/C pressure is greater than a predetermined value, the cooling fan will operate at a low speed. The fan will shut OFF if the temperature or pressure drops below the predetermined value, but will only operate for 2 minutes, regardless of the coolant temperature or A/C pressure.

Cooling Fan Description and Operation

Cooling Fan Control

The engine cooling fan system is composed of 3 electric cooling fans. Each fan motor assembly contains an integral cooling fan control module. The cooling fan control modules communicate with the engine control module (ECM) independently, via a local interconnect network (LIN). The ECM controls the fan speed of each fan by sending a digital signal to the cooling fan control modules over two different serial data circuits. Each cooling fan control module decodes it’s respective signal to control the voltage drop across the cooling fan motor in relation to the speed request, using a pulse width modulated (PWM) signal. This allows each of the cooling fans to operate at variable speeds independent of each other.

Each cooling fan and module is programed to its location within the system. If the cooling fans are not connected to their specific connector, the fans will operate without a DTC, but there may be noise or performance issues that occur. The cooling fans may not operate at equal speeds for a given cooling fan command to prevent unwanted noise or vibration.

The cooling fan speed is affected by many different conditions and the ECM will adjust the duty cycle from 0–100 percent based on cooling system requirements. The actual commanded cooling fan speed is based on a number of inputs from the ECM, and cooling fan requests from other modules, such as the BCM, TCM, and HPCM, if equipped. When multiple cooling fan speed requests are received, the ECM commands the cooling fan control module to operate the fan at the highest requested speed.

The scan tool Cooling Fan Request Source parameter identifies the predominant sub-system requiring cooling fan operation. The scan tool output control is only capable of operating a cooling fan in increments between 20–80 percent. 80 percent is considered high speed. The increments and ranges found within the scan tool function may vary from vehicle to vehicle.

The ECM commands the fan On under the following conditions:

- The engine coolant temperature is warmer than a predetermined temperature.
- The engine oil temperature is warmer than a predetermined temperature.
- The A/C pressure reaches a predetermined pressure.
- If the engine coolant temperature at key-off is warmer than a predetermined value, or the A/C pressure is greater than a predetermined value, the cooling fan will operate at a low speed. The fan

will shut OFF if the temperature or pressure drops below the predetermined value, but will only operate for 2 minutes, regardless of the coolant temperature or A/C pressure.

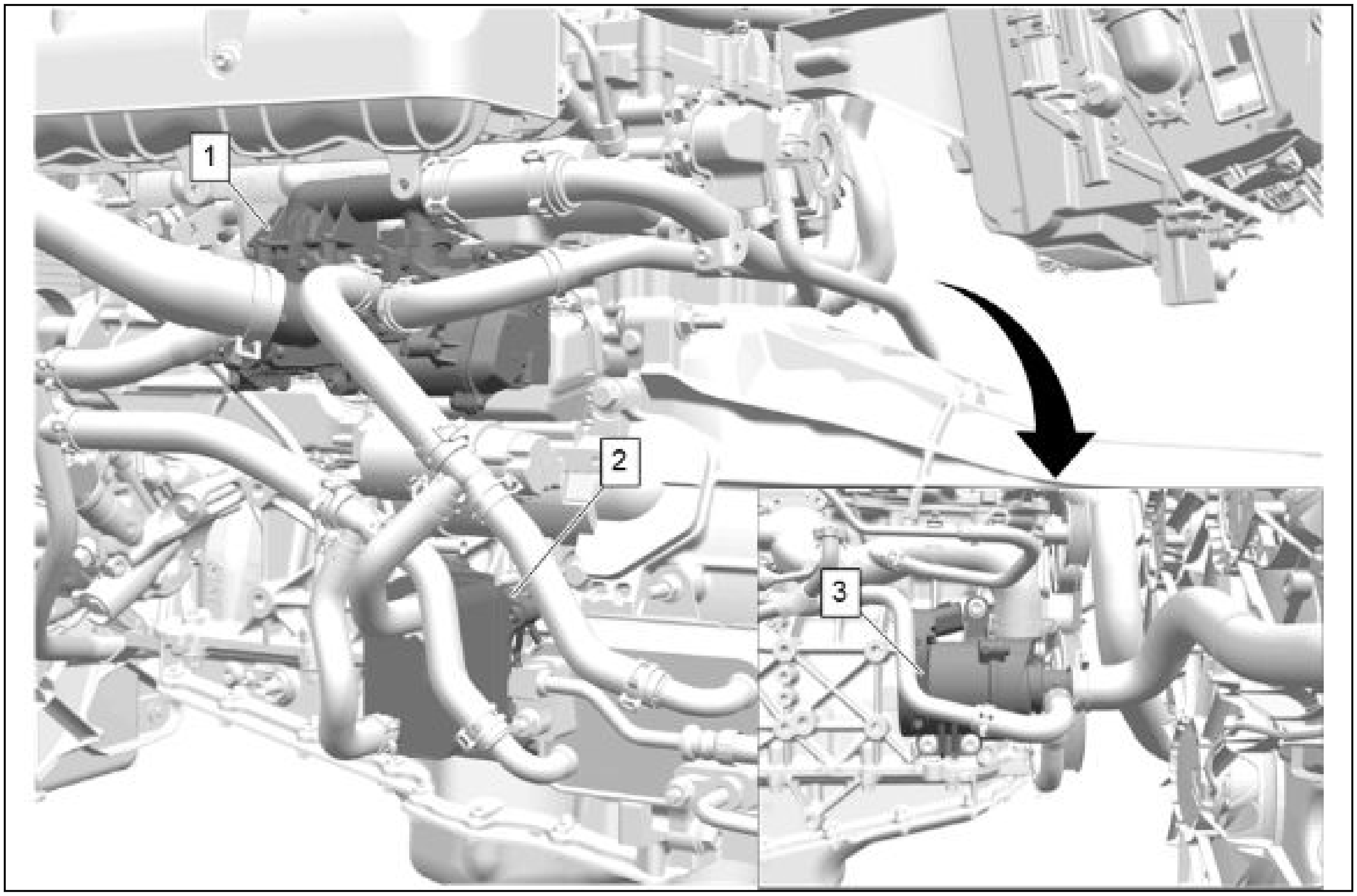
Cooling System Description and Operation

Active Thermal Management

This vehicle uses Advance Technology cooling system design, which makes use of Active Thermal Management (ATM) strategy. The difference between conventional cooling systems that use mechanical water pumps and active thermal management is that the predominant goal of the ATM strategy is to prioritize fuel economy by maintaining an ideal engine operating temperature during all engine speeds and operating conditions, while still meeting customer expectations for vehicle performance and reducing vehicle emissions.

The key features of ATM include:

- **Engine: Internal**
  - Integrated manifold that pulls heat from the engine exhaust.
  - Improved engine coolant jacket that targets hot spots in the engine.
- **Engine Mounted**



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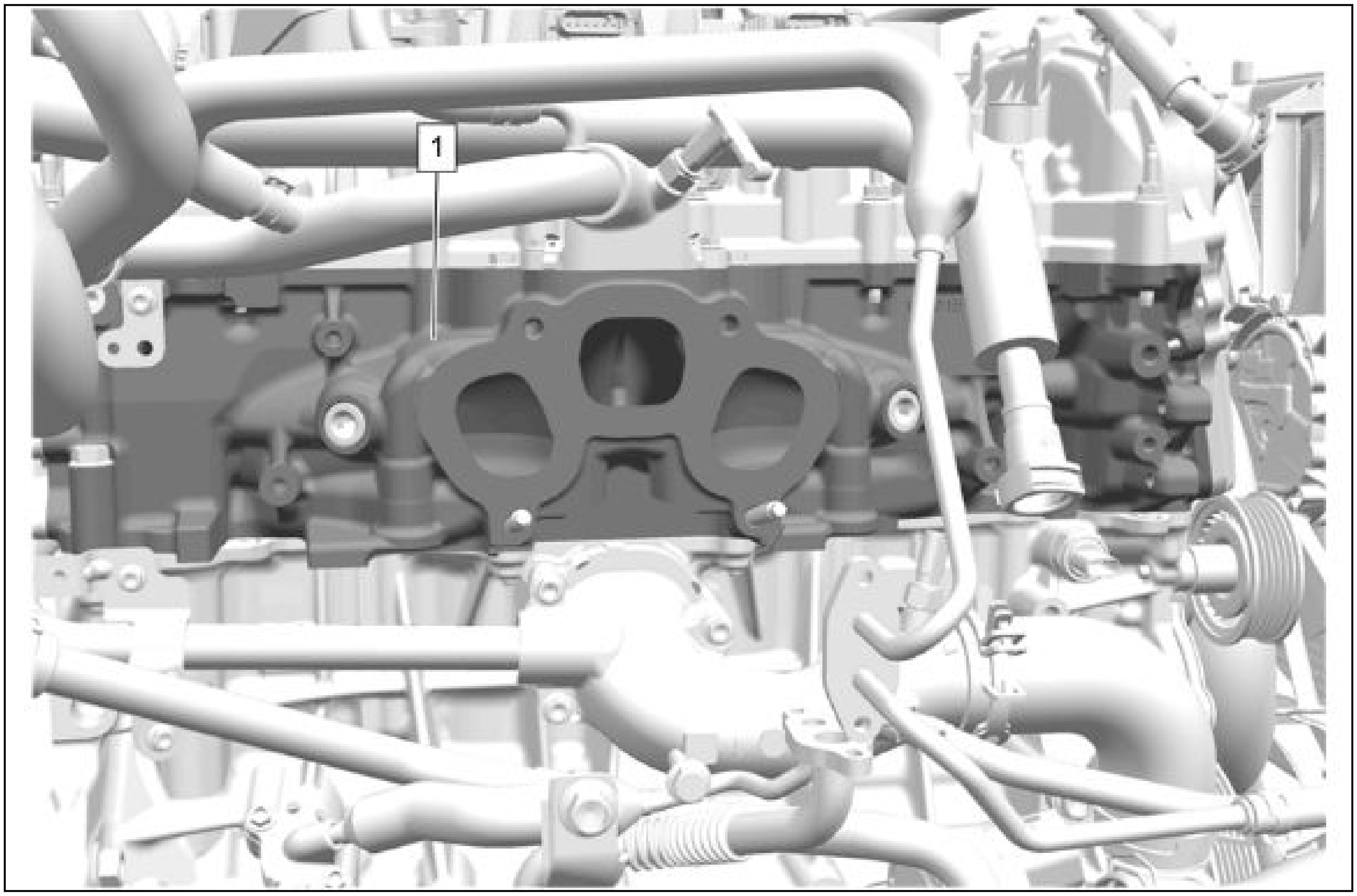
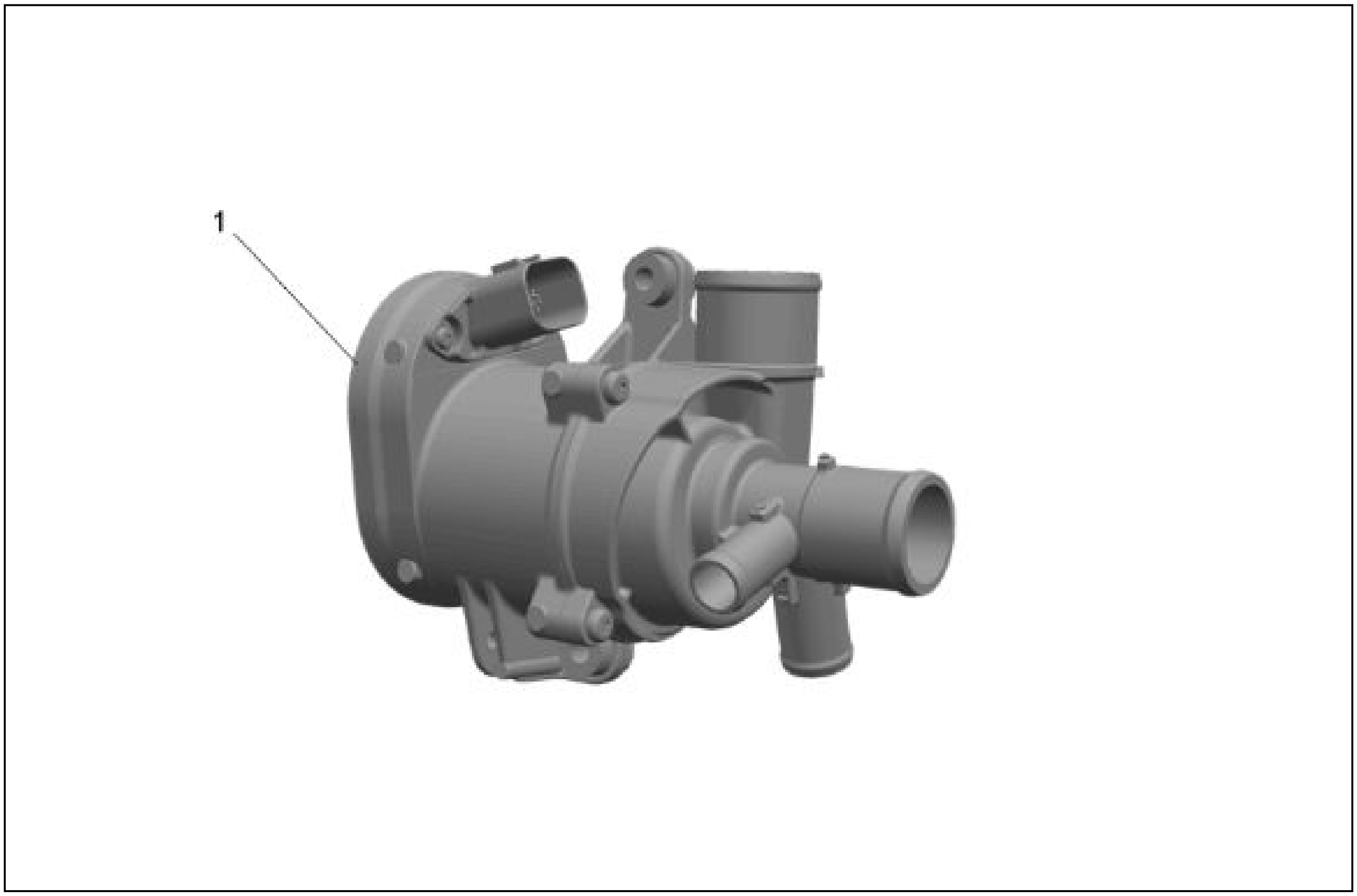
  - Electric water pump (1) that replaces the conventional mechanical water pump.
  - The Coolant Control Valve assembly (2) contains two rotary control valves. The Block Rotary Coolant Valve and the Main Rotary Coolant Valve both eliminate the need for the conventional cooling system thermostat.
  - Engine oil cooler (3) that uses coolant to heat or cool the engine oil as required.
- **Temperature and Position Sensors**
  - The Engine control module, which controls the complete ATM system using feedback from numerous sensors:
  - Engine Block Coolant Temperature Sensor
  - Engine Cylinder Head Coolant Temperature Sensor
  - Engine Inlet Coolant Temperature Sensor
  - Engine Outlet Coolant Temperature Sensor

  - Engine Oil Temperature Sensor 1 and 2
  - Transmission Oil Temperature Sensor
  - Radiator Outlet Coolant Temperature Sensor
  - Engine Coolant Flow Control Valve Position Sensor
- **Integrated Manifold**



  - The integrated manifold (1) is part of the cylinder head and is used to extract heat from the exhaust, which can then be directed to either the engine, engine oil cooler, automatic transmission fluid cooling exchanger, or the passenger compartment heater core. The integrated manifold provides a large portion of recuperated heat to the coolant.
- **Electric Water Pump**



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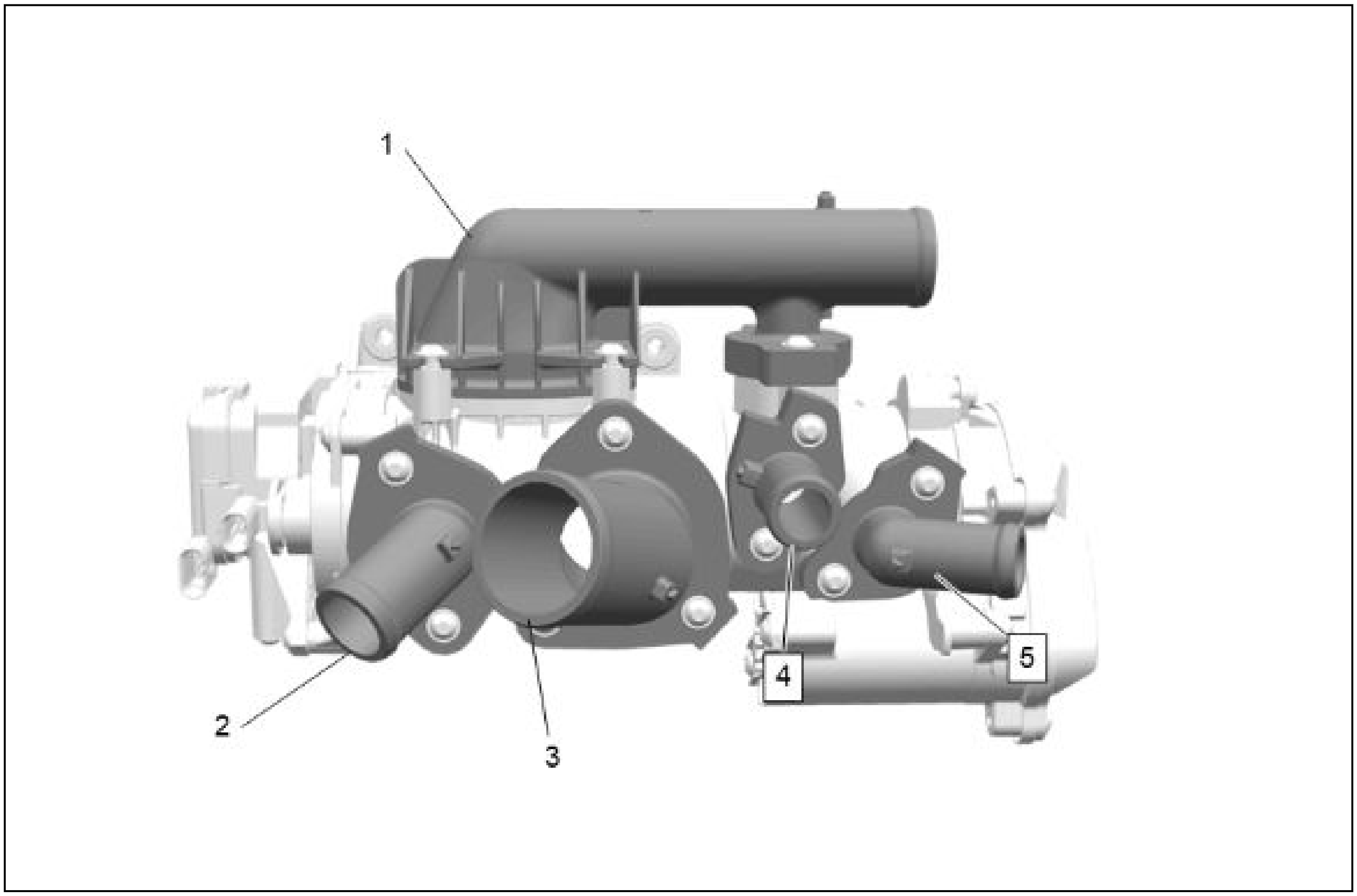
- The electric water pump (1) is attached to the side of the engine and controls the coolant flow through the entire coolant system. The electric water pump replaces the conventional belt or chain driven pump whose speed is directly coupled to the engine speed. The coolant flow from the electric water pump is not related to engine speed but it is independently controlled by the engine control module.

- **Engine Coolant Flow Control Valve**



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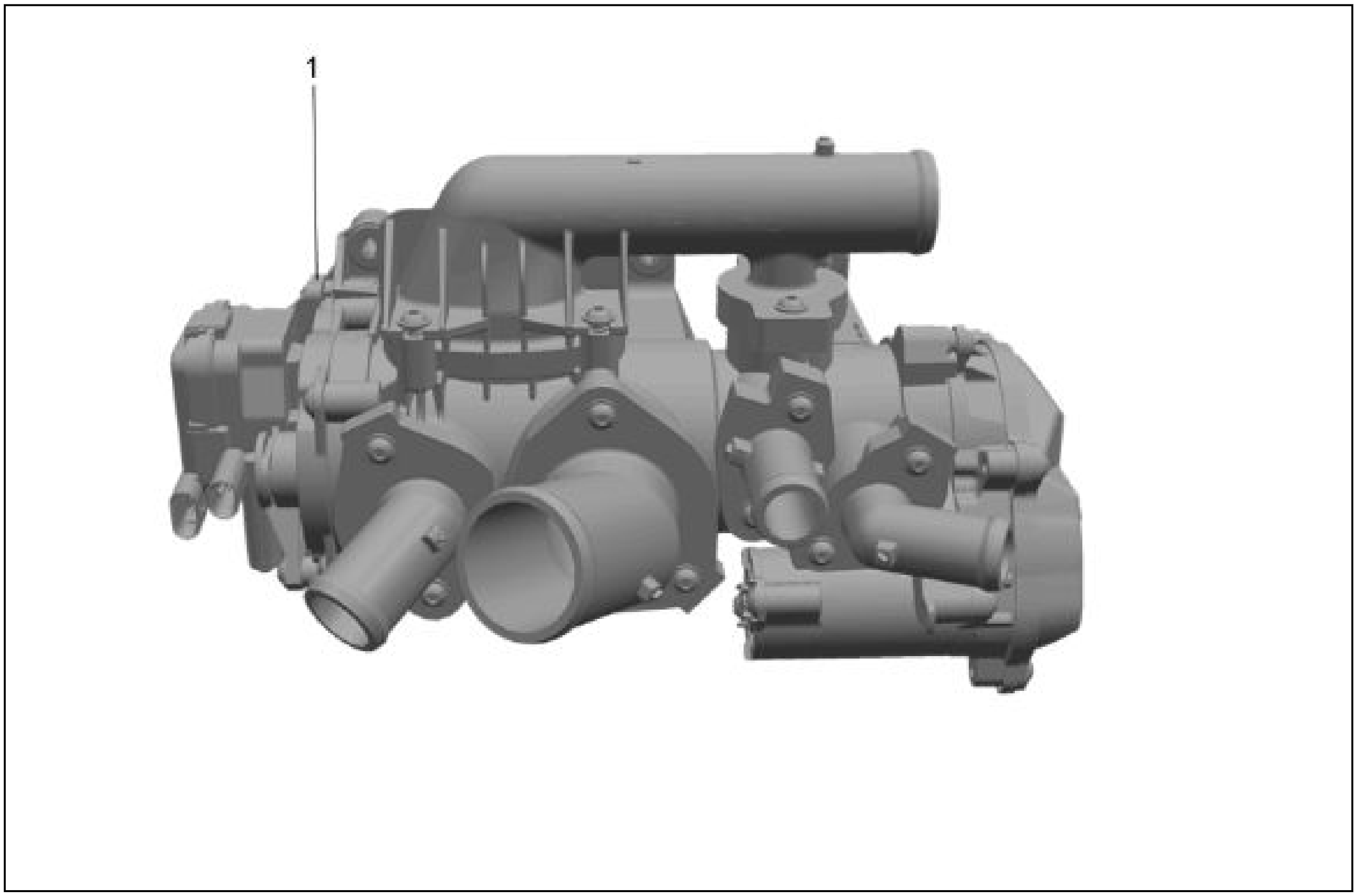
- The engine coolant flow control valve controls coolant flow to the radiator as well as the engine and transmission oil heat exchangers eliminating the need for a conventional wax-operated thermostat and is controlled by the engine control module, through sensor feedback. Hot coolant from the Integrated Exhaust Manifold (IEM) is brought in through the port on the top of the valve (1). The left most port (2) is the bypass port and sends hot coolant back to the water pump. The port that is second from the left, and the biggest port (3), is the radiator port and sends hot coolant to the radiator. The right two ports (4, 5) are for the engine and transmission oil heat exchangers and the ports send hot coolant to the oil heat exchangers when the oils are cold, and cold coolant to the oil heat exchangers when the oils are hot.

- **Engine Coolant Flow Control Valve (Block Rotary Coolant Valve)**



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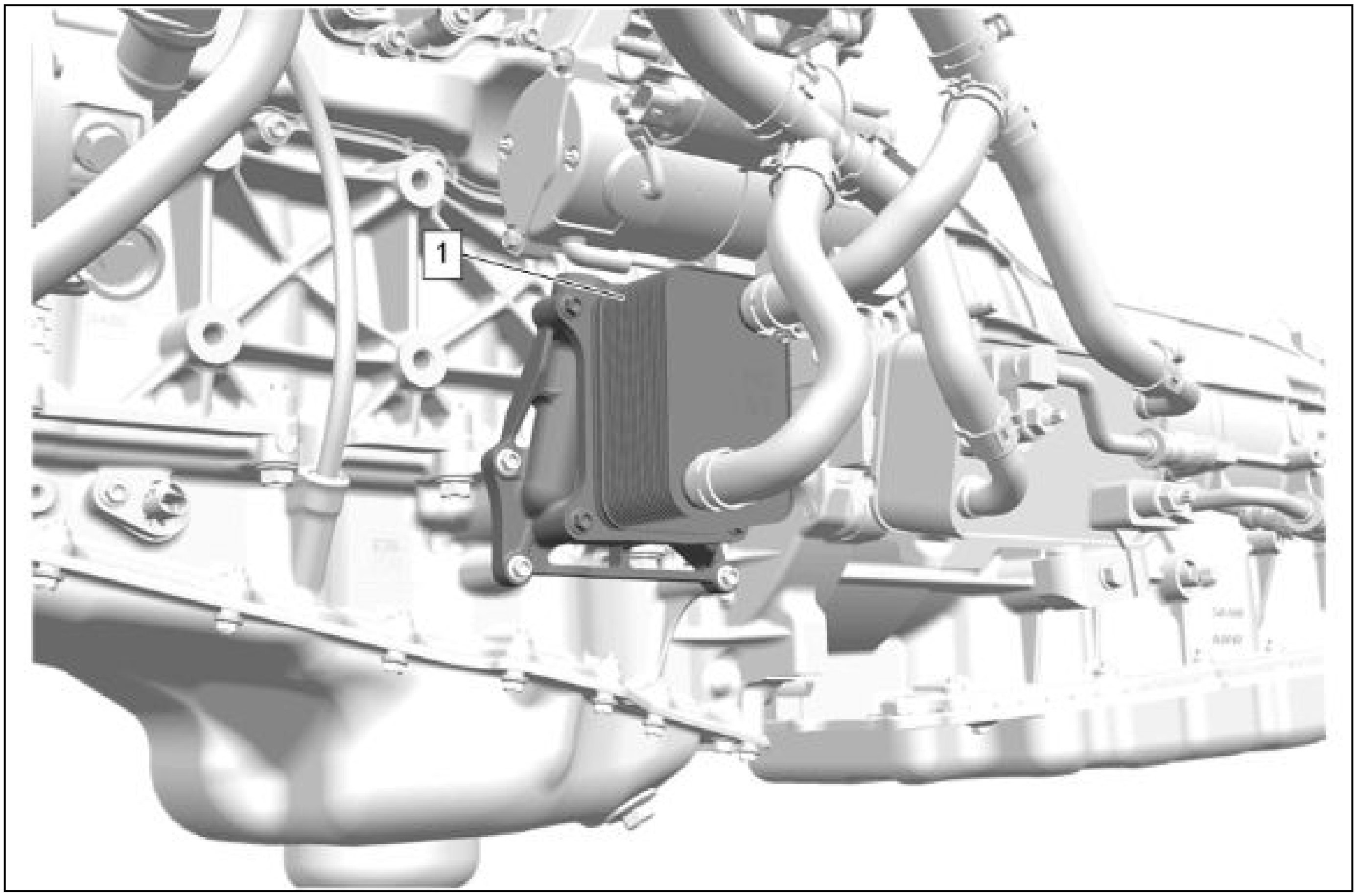
- The main rotary coolant rotary valve is part of the engine coolant flow control valve and is located on the right side of the valve assembly (1). The main rotary valve controls coolant flow to the radiator, bypass and oil heat exchangers.
- The block rotary coolant valve is part of the engine coolant flow control valve and is located on the left side of the valve assembly. The block rotary control valve has its own actuator and allows independent/separate control of the block temperature and can be activated at any point during vehicle operation.
- The combination of the main rotary coolant valve and the block rotary coolant valve is critical to achieving optimal combustion chamber temperatures as quickly as possible during engine warm up.

- **Engine Oil Cooler**



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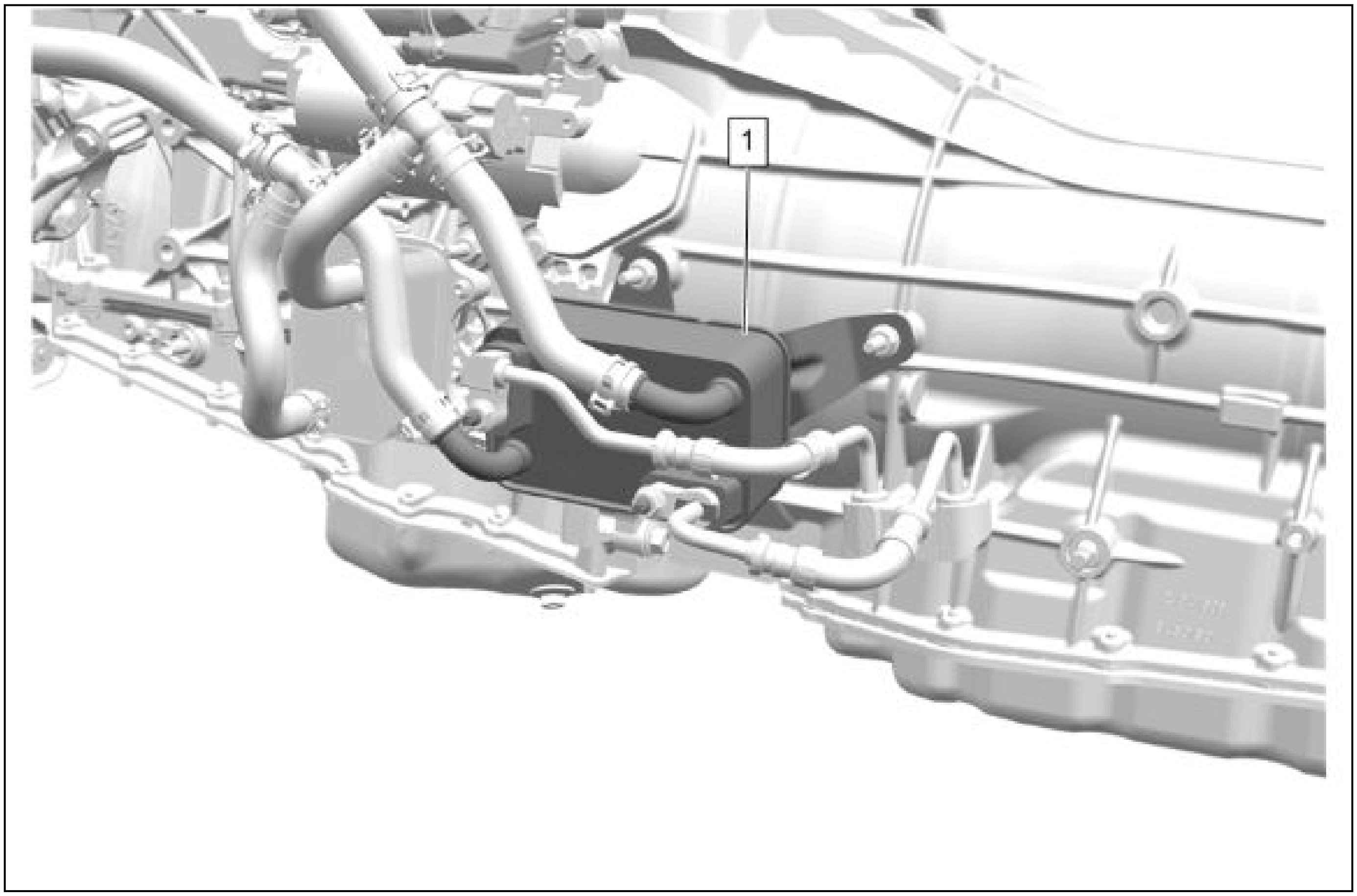
- The engine oil cooler (1) is a heat exchanger that is attached to the side of the engine and exchanges heat between the engine oil and engine coolant. The engine oil fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

- **Automatic Transmission Fluid Cooling Exchanger**



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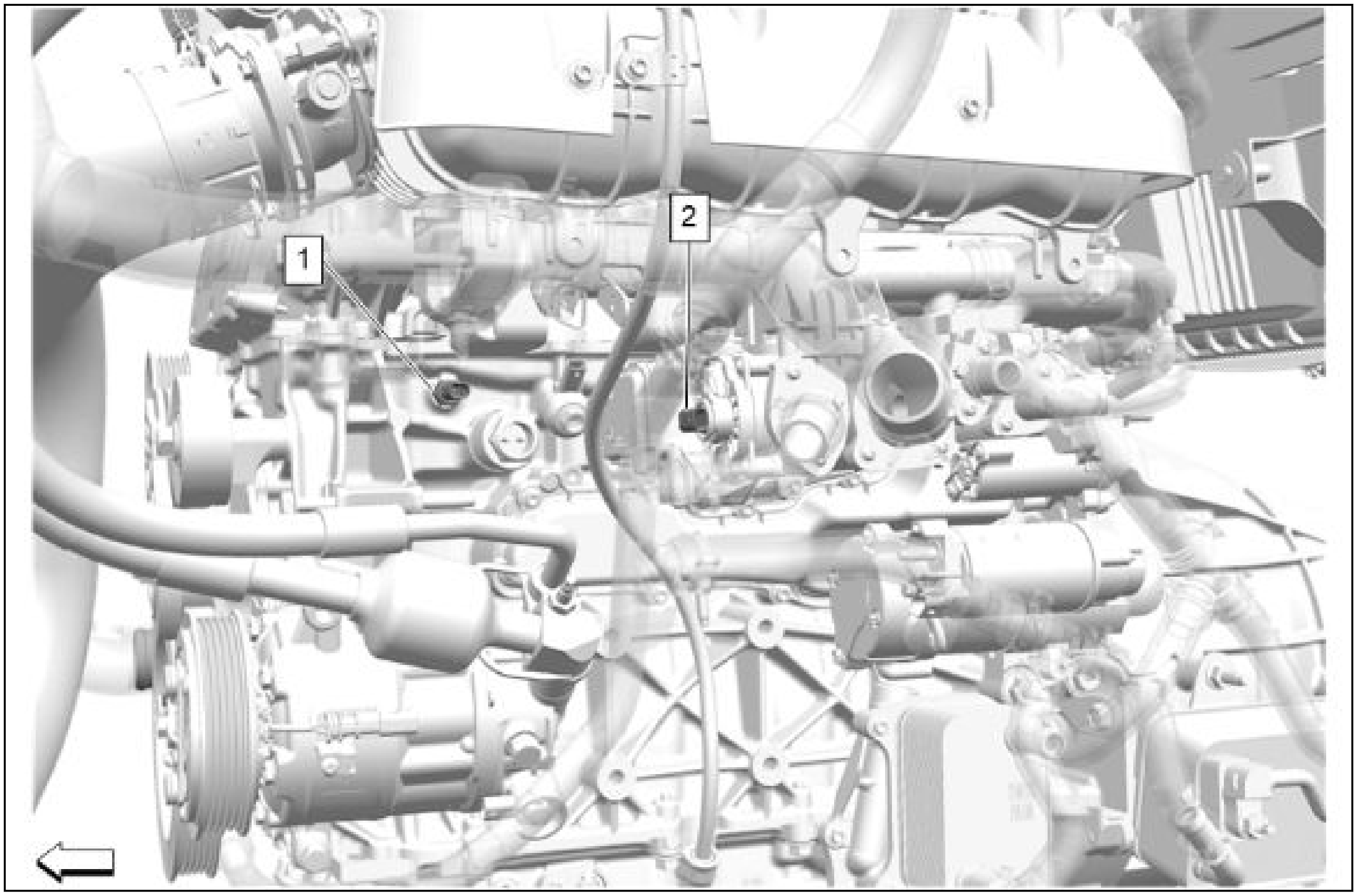
- The automatic transmission fluid cooling exchanger is a heat exchanger that is attached to the front of the transmission and exchanges heat between the transmission oil and engine coolant. The automatic transmission fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

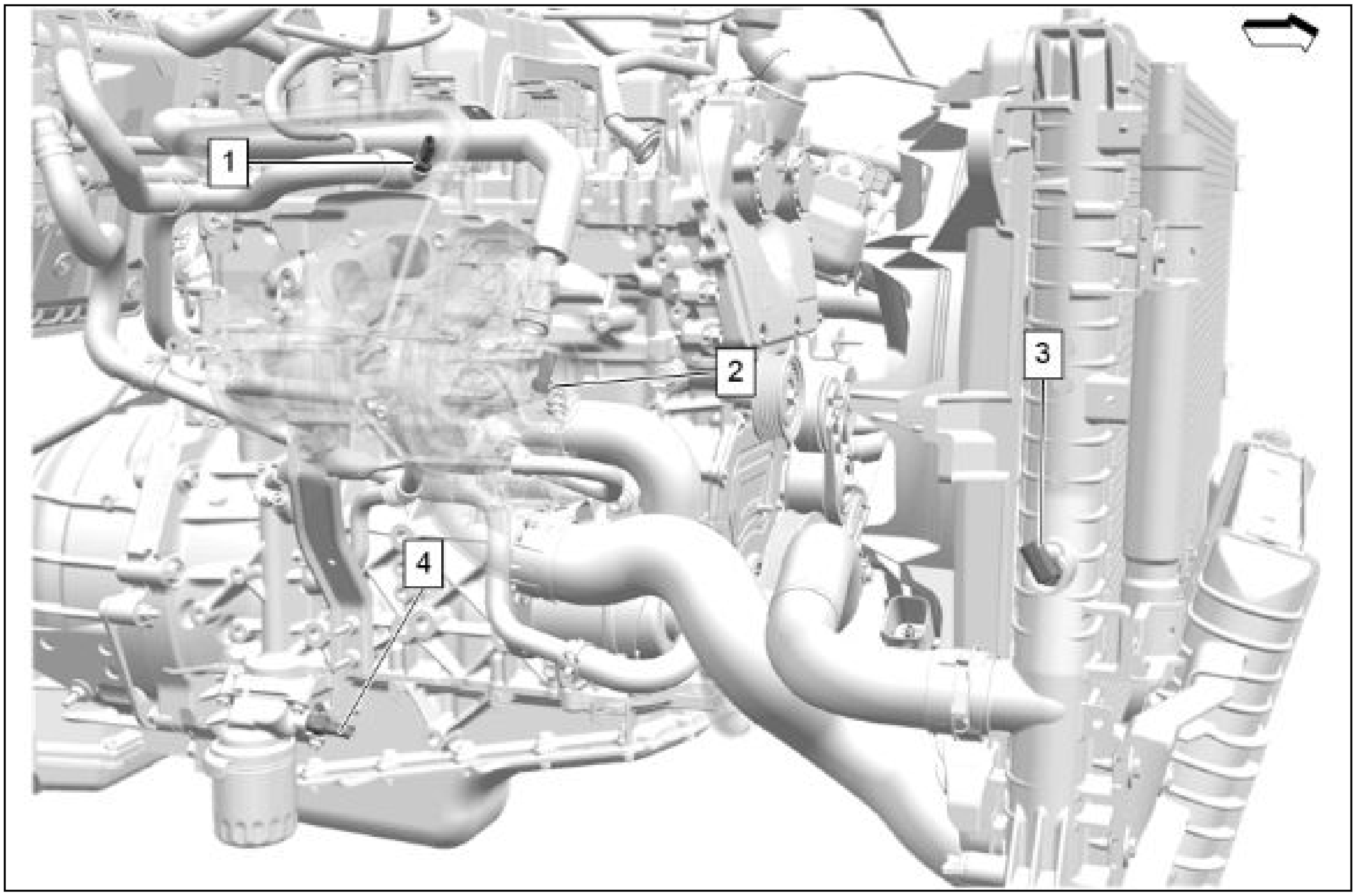
- **Automatic Coolant Service Fill Description**
  - Active Thermal Management Systems are more difficult to fill with coolant than traditional thermostat based systems, therefor the vehicle is equipped with an automatic coolant service fill that can be activated via the scan tool or driver controls that will cycle the electric water pump and coolant valves to de-aerate the coolant system.

Component Locator - Engine View



Left side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Coolant Temperature Sensor 6	Engine Block Coolant Temperature Sensor
2	Engine Coolant Temperature Sensor 1	Engine Outlet Coolant Temperature Sensor
—	Engine Block Coolant Control Valve Position Sensor	Part of Engine Coolant Flow Control Valve
—	Engine Coolant Control Valve Position Sensor	Part of Engine Coolant Flow Control Valve



Right side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Coolant Temperature Sensor 5	Engine Cylinder Head Coolant Temperature Sensor
2	Engine Coolant Temperature Sensor 2	Engine Inlet Coolant Temperature Sensor
3	Radiator Coolant Temperature Sensor	Radiator Outlet Coolant Temperature Sensor
4	Engine Oil Temperature Sensor	Engine Oil Temperature Sensor 1 and 2
Internal to the transmission	Transmission Oil Temperature Sensor	Transmission Oil Temperature Sensor

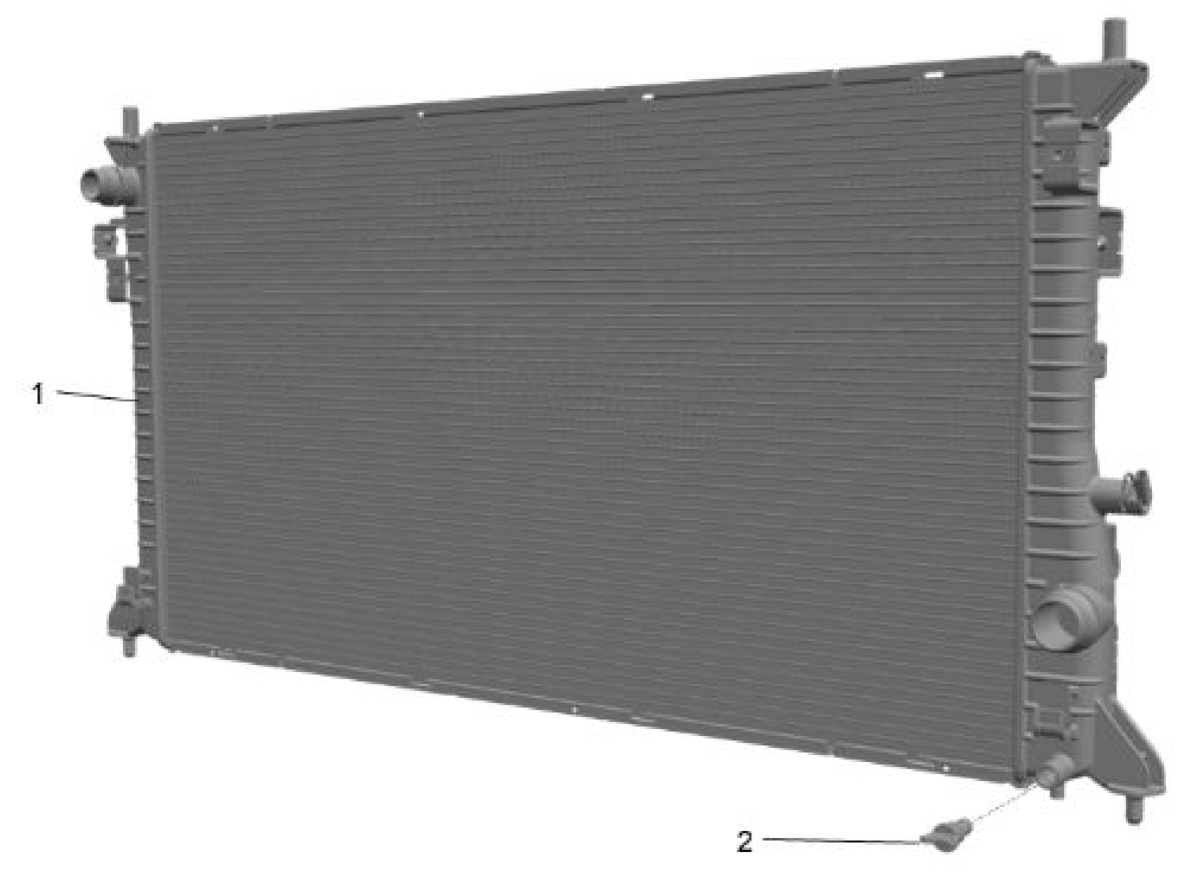
Cooling System Components

- Various temperature and position sensors provide data back to the engine control module.
- ATM still uses many of the conventional cooling system features, including:
  - Coolant
  - Coolant Hoses
  - Radiator
  - Radiator Bypass Route
  - Radiator Surge Tank
  - Surge Tank Pressure Cap
  - Engine Coolant Indicators
  - Air Baffles/Guides and Seals
  - Cabin Heater Core Route, if equipped with Rear Cabin Heater

Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution transfers heat between the components of the engine heating/cooling system.

Radiator



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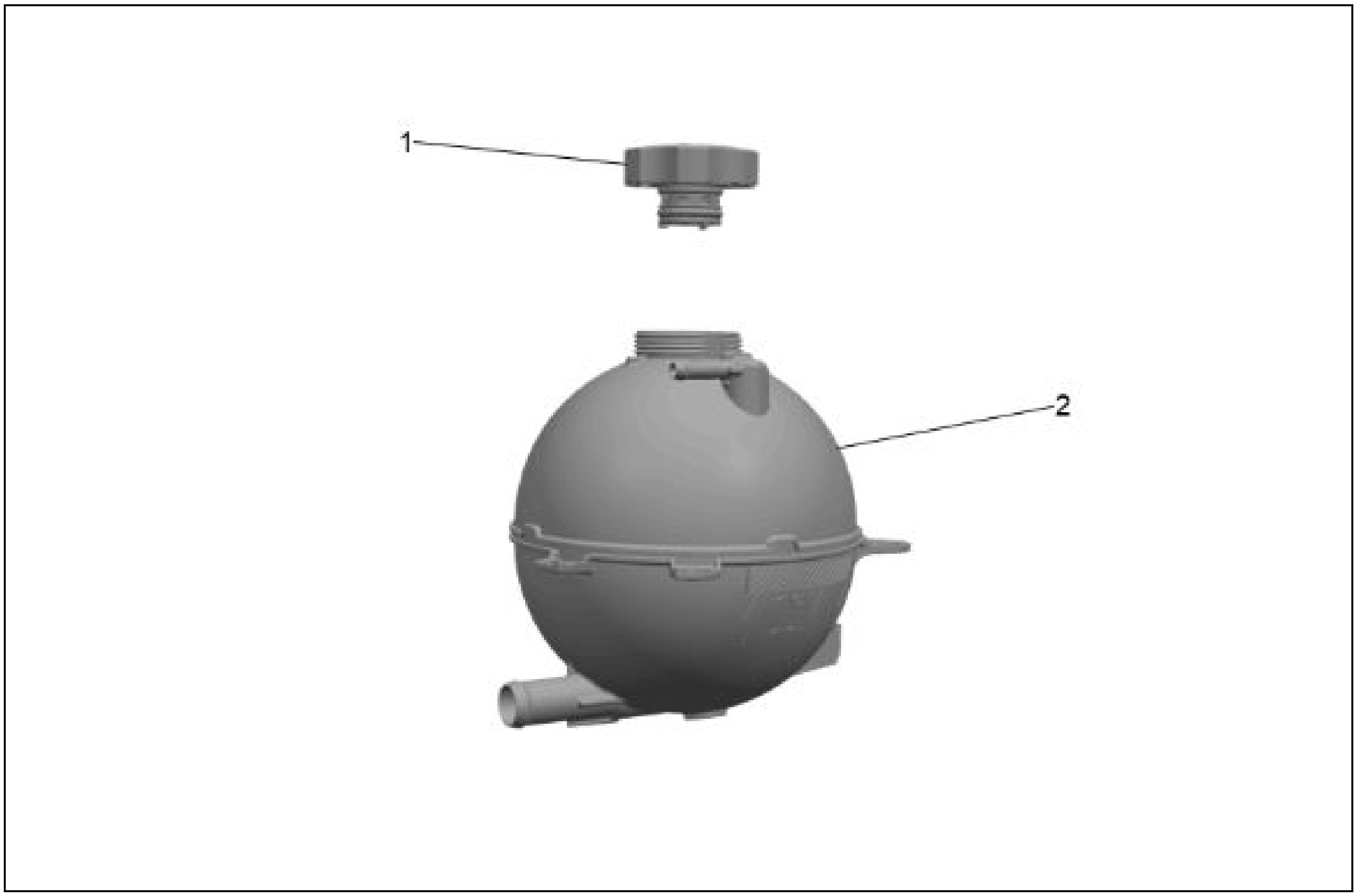
The radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core. The fins on the core transfer heat from the coolant passing through the tubes. Air passing between the fins absorbs the heat and cools the coolant. Heat is removed from the coolant as the coolant passes through the radiator.

The radiator also has a drain cock (2) located in the bottom of the left or right hand tank. The drain cock unit includes the drain cock and drain cock seal.

Radiator Surge Tank



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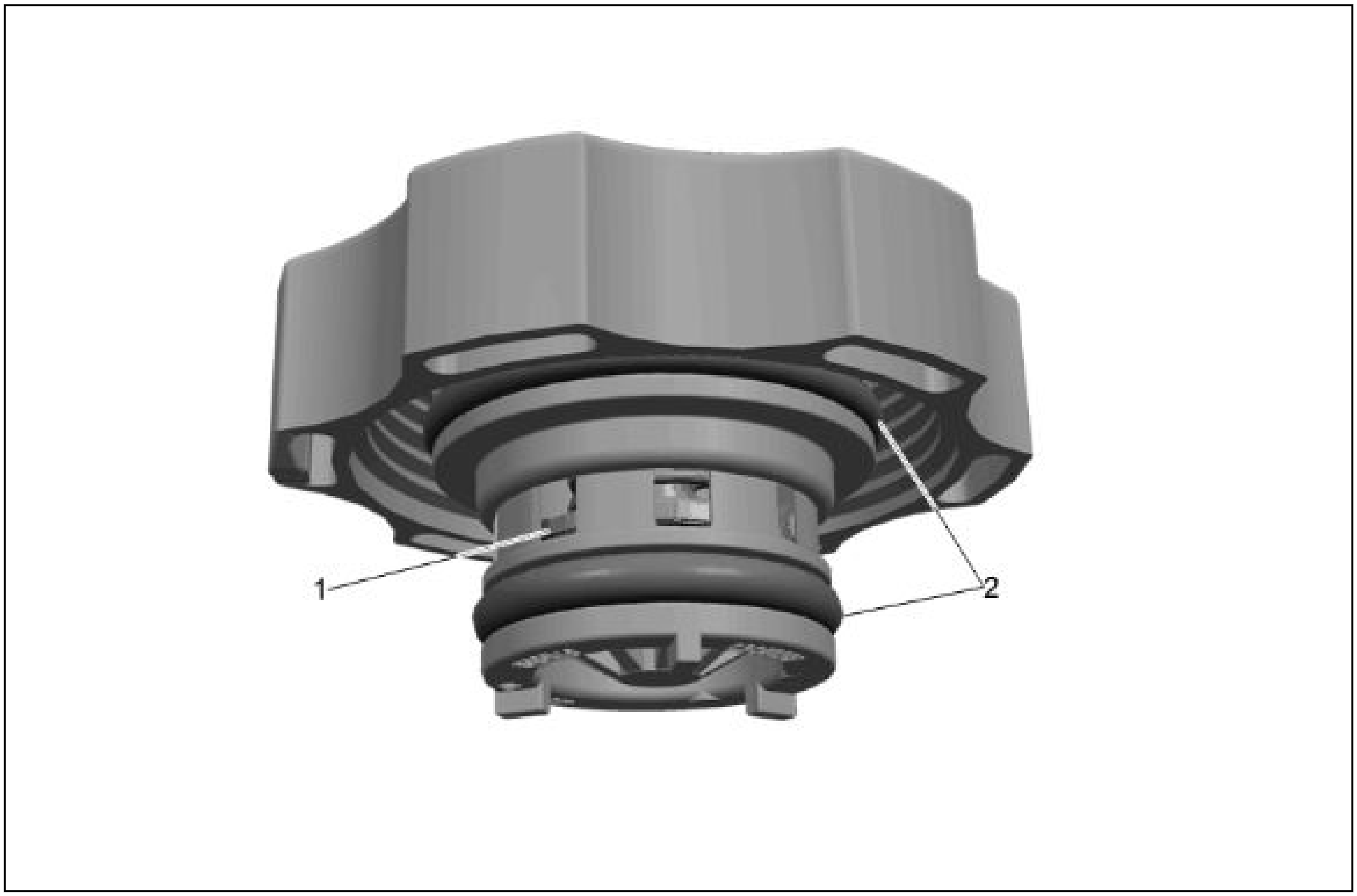
The radiator surge tank (2) is a plastic tank with a pressure cap (1) mounted to it. The tank is mounted at a point higher than all other coolant passages. The surge tank provides an air space in the cooling system. The air space allows the coolant to expand and contract. The surge tank also provides a coolant fill point and a central air bleed location. During vehicle use, the coolant heats and expands. The coolant that is displaced by this expansion flows into the surge tank. As the coolant circulates, air is allowed to exit. This is an advantage to the cooling system. Coolant without air bubbles absorbs heat much better than coolant with air bubbles.

Radiator Surge Tank Cap



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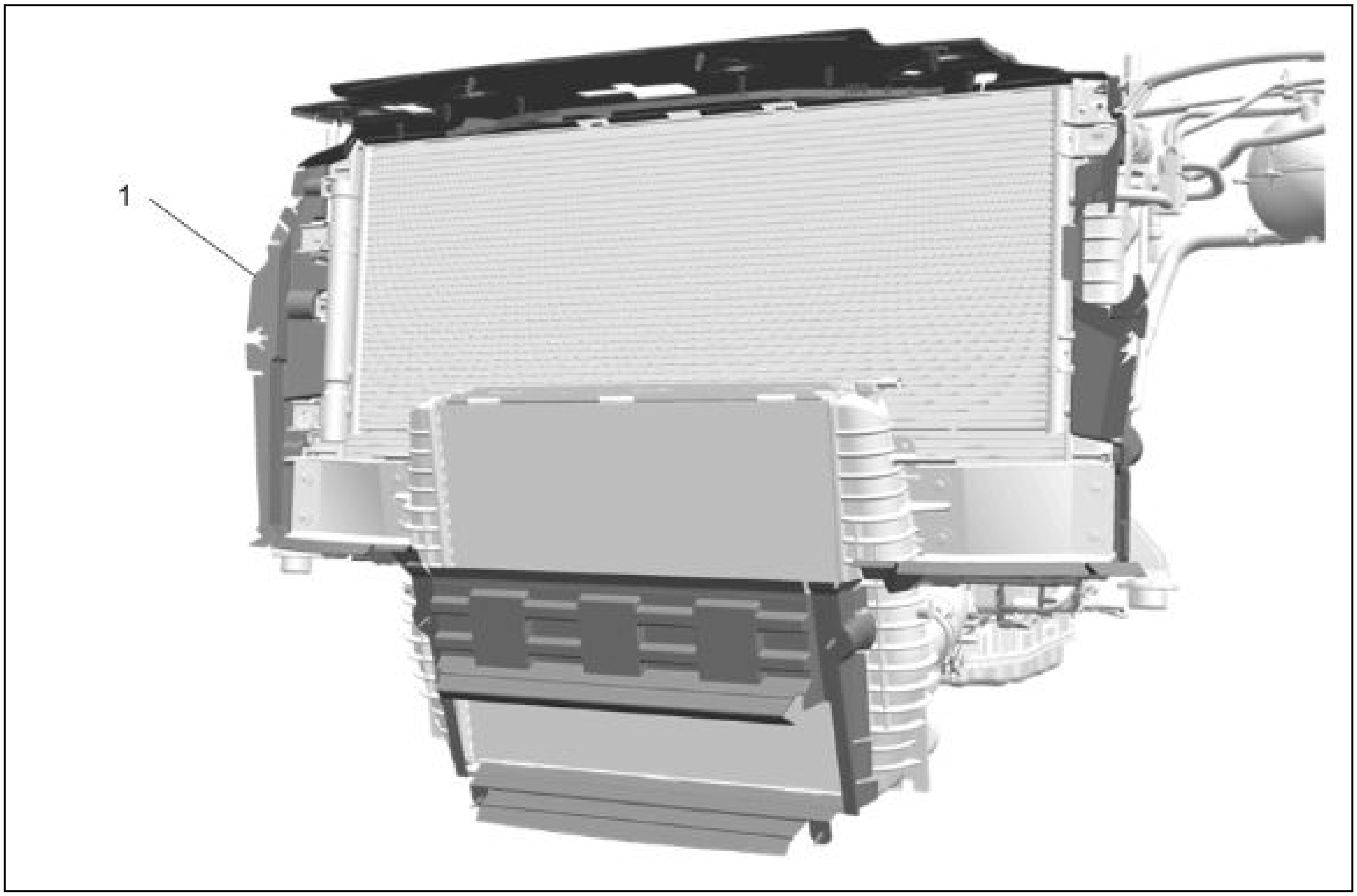
The radiator surge tank cap is a pressure cap that seals (2) and pressurizes the cooling system. It contains a blow off or pressure valve (1) and a vacuum or atmospheric valve.

- The pressure valve is held against its seat by a spring and protects the radiator by relieving pressure if it exceeds 20 psi.
- The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off. The vacuum, if not relieved, could cause the radiator hoses to collapse.
- The pressure cap allows pressure in the cooling system to build up. As the pressure builds, the boiling point of the coolant goes up as well. Therefore, the coolant can be safely run at a temperature higher than the boiling point of the coolant at atmospheric pressure.
- The hotter the coolant is, the faster the heat moves from the radiator to the cooler passing air. However, if the pressure exceeds the strength of the spring, the pressure valve rises so that the excess pressure can escape.
- When the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the cooling system. This equalizes the pressure in the cooling system with atmospheric pressure, thus preventing the radiator hoses from collapsing.

Air Baffles/Guides and Seals



The cooling system uses deflectors, air baffles/guides and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles/guides are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

Engine Coolant Indicators

The instrument panel cluster (IPC) shows the engine temperature on the temperature gauge. The value is sent on the data communication line from engine control module. When the coolant temperature is hot, the IPC receives a discrete input from engine control module requesting illumination.

The IPC performs the display test at the start of each ignition cycle. The IPC illuminates the TEMP indicator.

Coolant Heater (If Equipped)

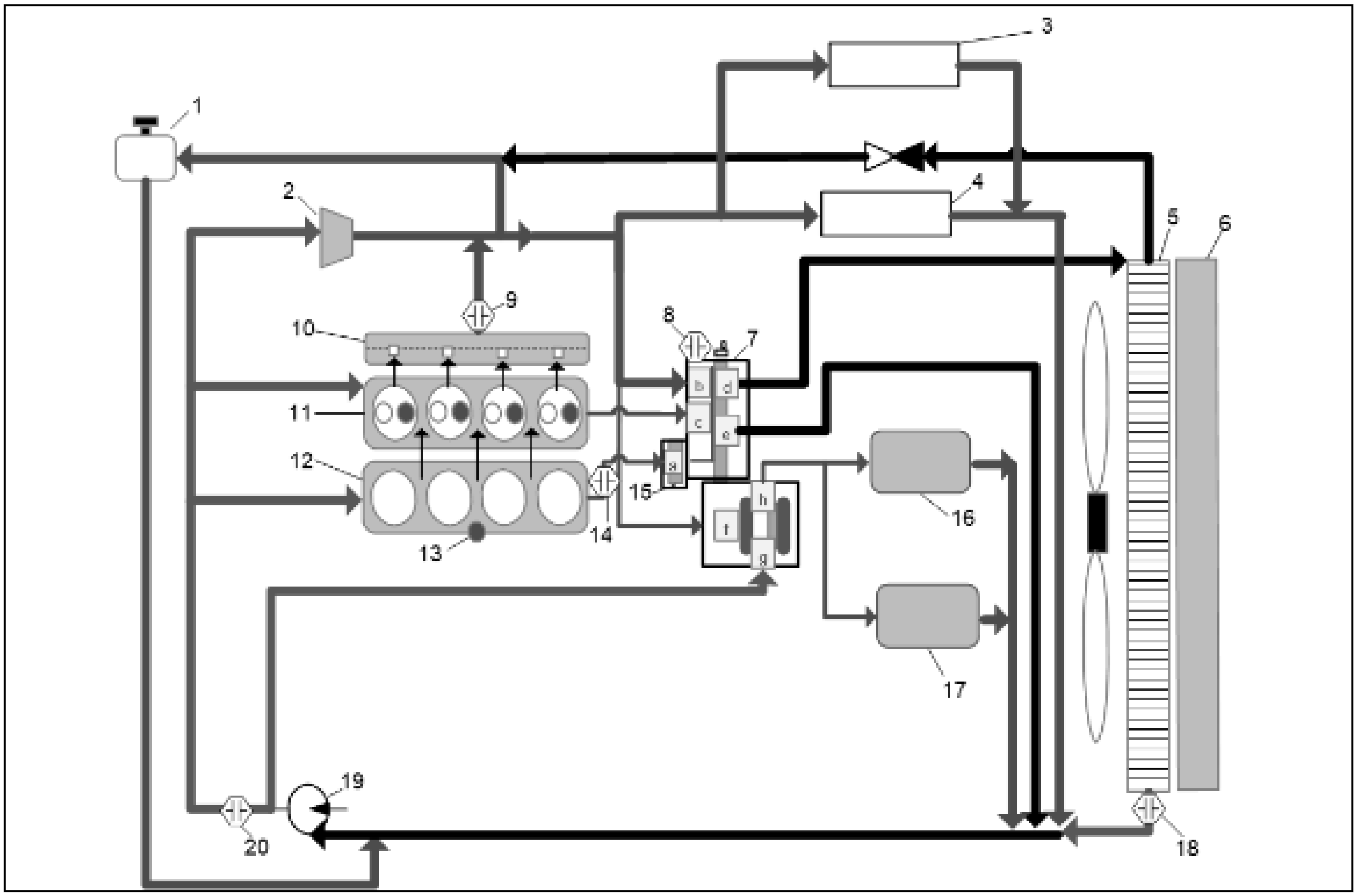
The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above **-18°C (0°F)**. A weather shield on the cord is provided to protect the plug when not in use.

Cooling Cycle

Coolant flows from the electric water pump outlet and into the engine circuit and turbocharger cooling circuit. It also provides cooled coolant flow from the radiator to the engine coolant flow control valve to be used as necessary to manage transmission and engine oil temperature. In the engine, the coolant flow direction and volume is controlled by the engine coolant flow control valve and the block control valve to provide necessary flow for optimal engine block, cylinder head, and exhaust manifold cooling. The engine coolant flow control valve can also provide the transmission and engine oil circuits warmed coolant from the engine to optimize the oil temperatures. Excess heat is removed from the coolant in the radiator and the cooled coolant returns to the electric water pump.

Mode 1 (Low Flow):

Flow Diagram - Mode 1



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(1) Surge Tank
(2) Turbocharger
(3) Auxiliary Heater Core (If Equipped)
(4) Heater Core
(5) Radiator
(6) Condenser
(7) Main Rotary Valve
(8) Engine Outlet Coolant Temperature Sensor
(9) Engine Cylinder Head Coolant Temperature Sensor
(10) Integrated Exhaust Manifold
(11) Cylinder Head
(12) Engine Block
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A

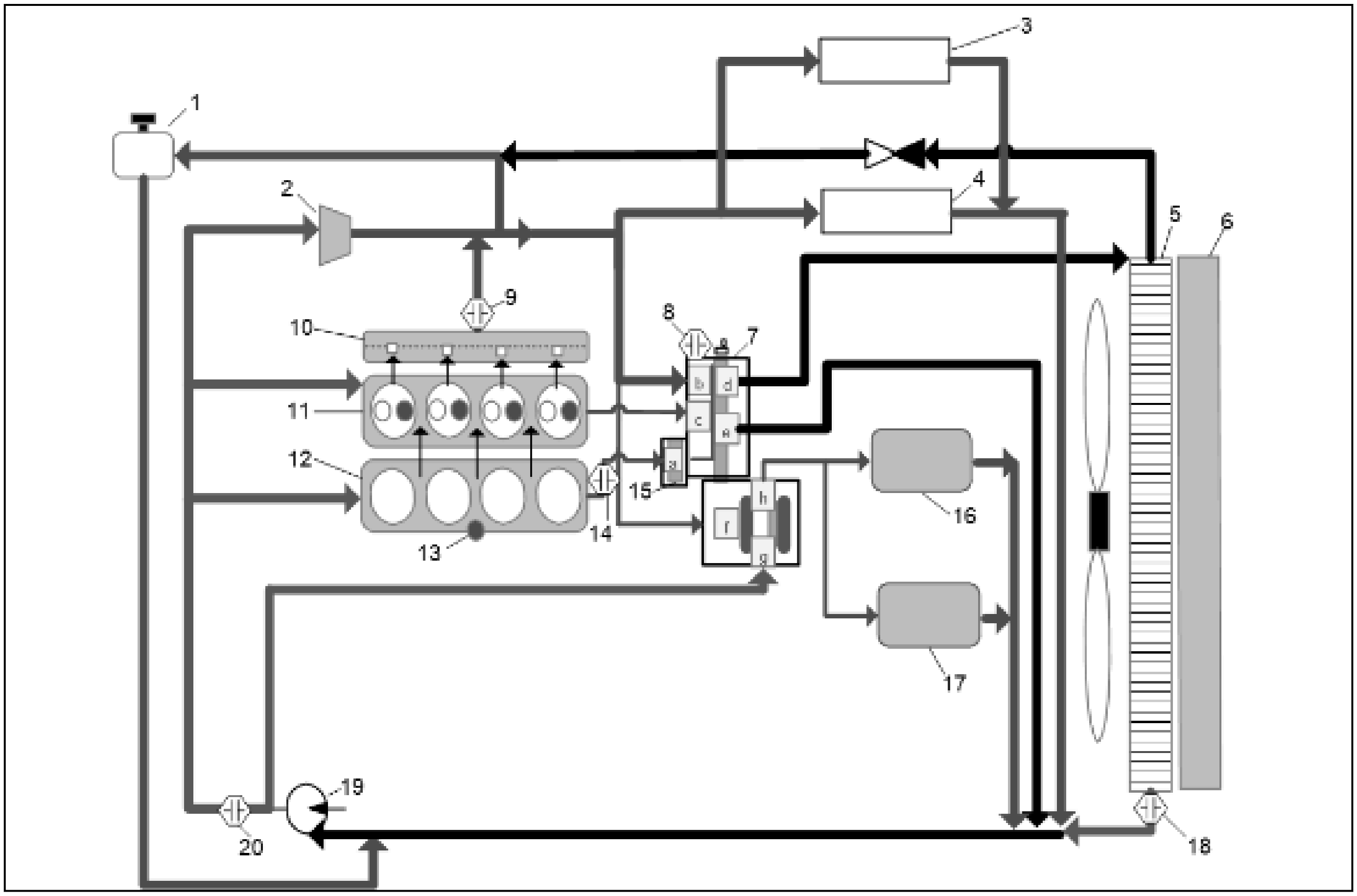
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

If the engine is started cold, the system will go to low flow mode, which means the electric water pump runs just enough for the sensors to provide reliable information on the state of the system. As the engine warms up, the heat stays around the combustion chamber and is not taken away by coolant flow. Low flow mode is the fastest method for engine warm up. Low flow mode will not enable if the interior HVAC is turned on.

COMPONENT	CONDITION
Electric Water Pump	Low Speed, Low Flow
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Coolant Control Valve	Low Speed, Low Flow

Mode 2 (Engine Warm Up With Cabin Heating Only):

Flow Diagram - Mode 2



(1) Surge Tank
(2) Turbocharger
(3) Auxiliary Heater Core (If Equipped)
(4) Heater Core
(5) Radiator
(6) Condenser
(7) Main Rotary Valve
(8) Engine Outlet Coolant Temperature Sensor

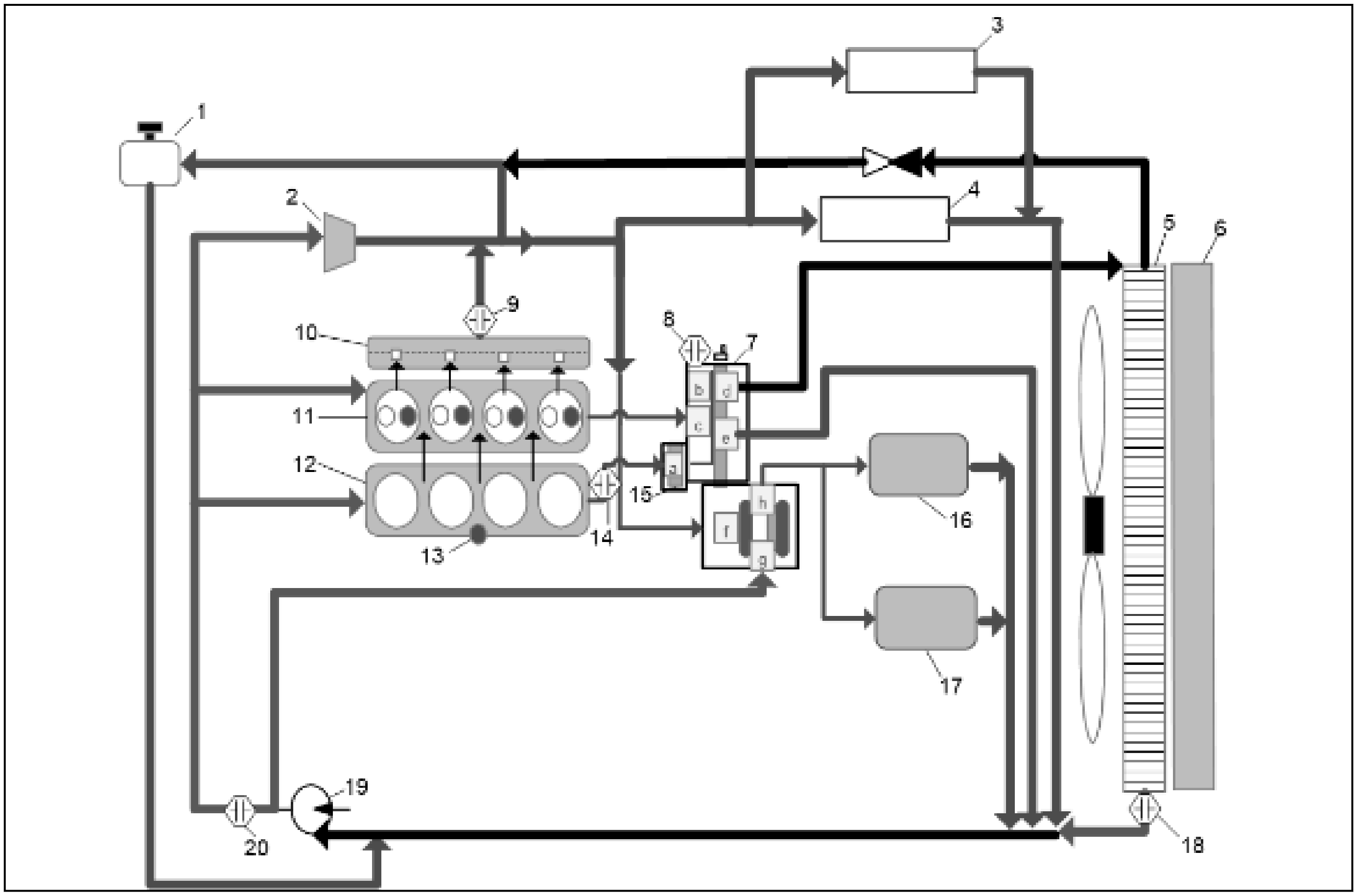
(9) Engine Cylinder Head Coolant Temperature Sensor
(10) Integrated Exhaust Manifold
(11) Cylinder Head
(12) Engine Block
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

When the driver requests passenger compartment heat or windshield defrosting, the electric water pump will control flow to maximize coolant heat transfer from engine to passenger compartment. This heater circuit is fed by a combination of warmed coolant from the cylinder head, integrated manifold and turbocharger cooler. The engine coolant flow control valve is at an all-closed position at this time. The warmed coolant goes directly to the passenger compartment heater core. Heater core flow returns to the electric water pump.

Flow Diagram - Mode 3

COMPONENT	CONDITION
Electric Water Pump	Low Speed or Speed-Controlled to Heater Core Demand
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Control Valve	Low Speed, Low Flow

Mode 3 (Engine Warm Up With Cabin Heating And Radiator Bypass):



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(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

(13) Engine Block Heater

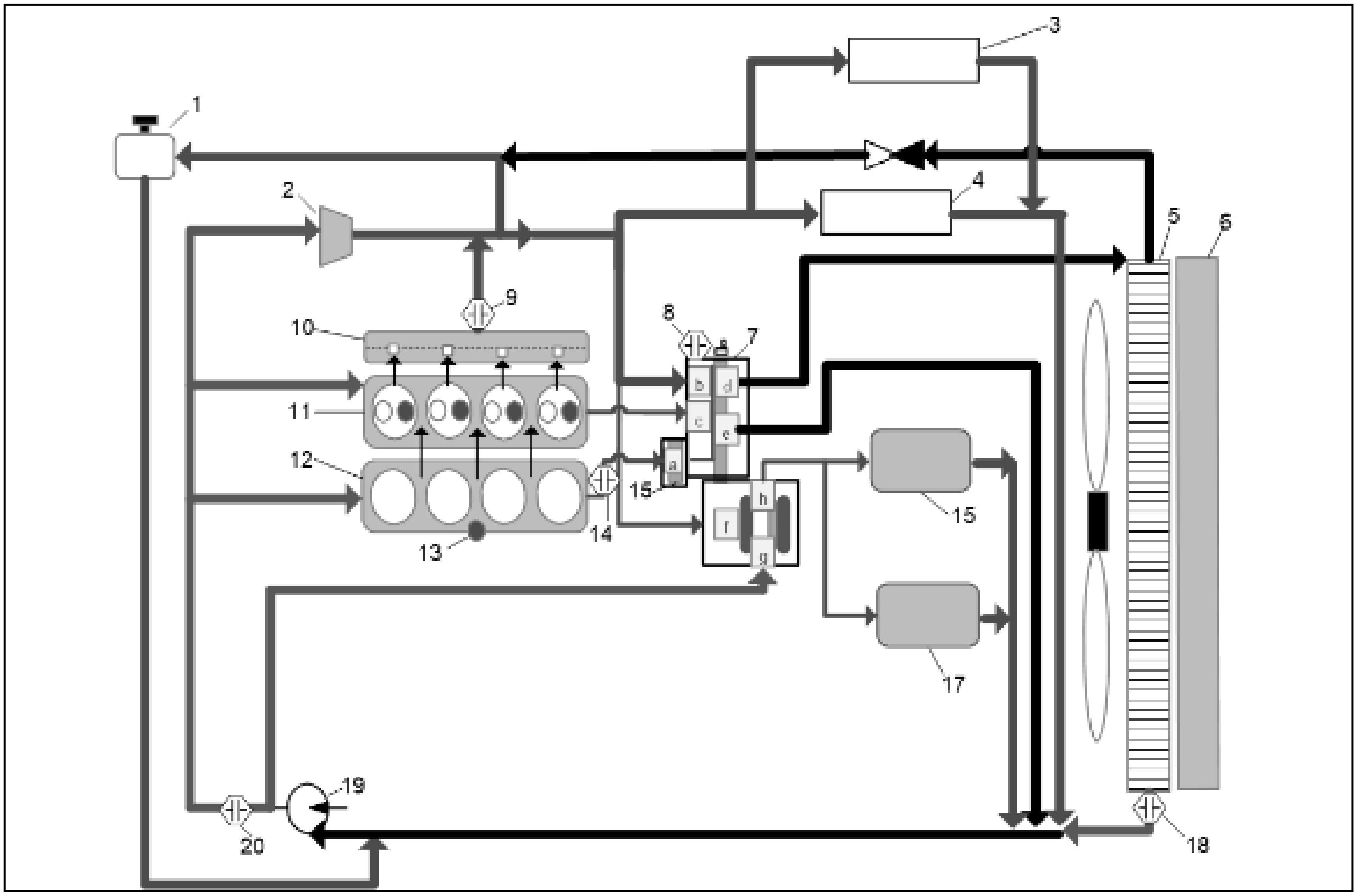
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. As combustion chamber temperatures get hotter, it is necessary to flow coolant through the cylinder head without losing heat to the radiator or engine/transmission oil heat exchangers. The Block Rotary Coolant Valve will allow flow through the cylinder head by opening the radiator bypass loop, which returns coolant directly to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Bypass Radiator
Block Rotary Control Valve	Position-Controlled

Mode 4 (Engine Warm Up With Cabin Heating, Radiator Bypass And Oil Heating):

Flow Diagram - Mode 4



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(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

(13) Engine Block Heater

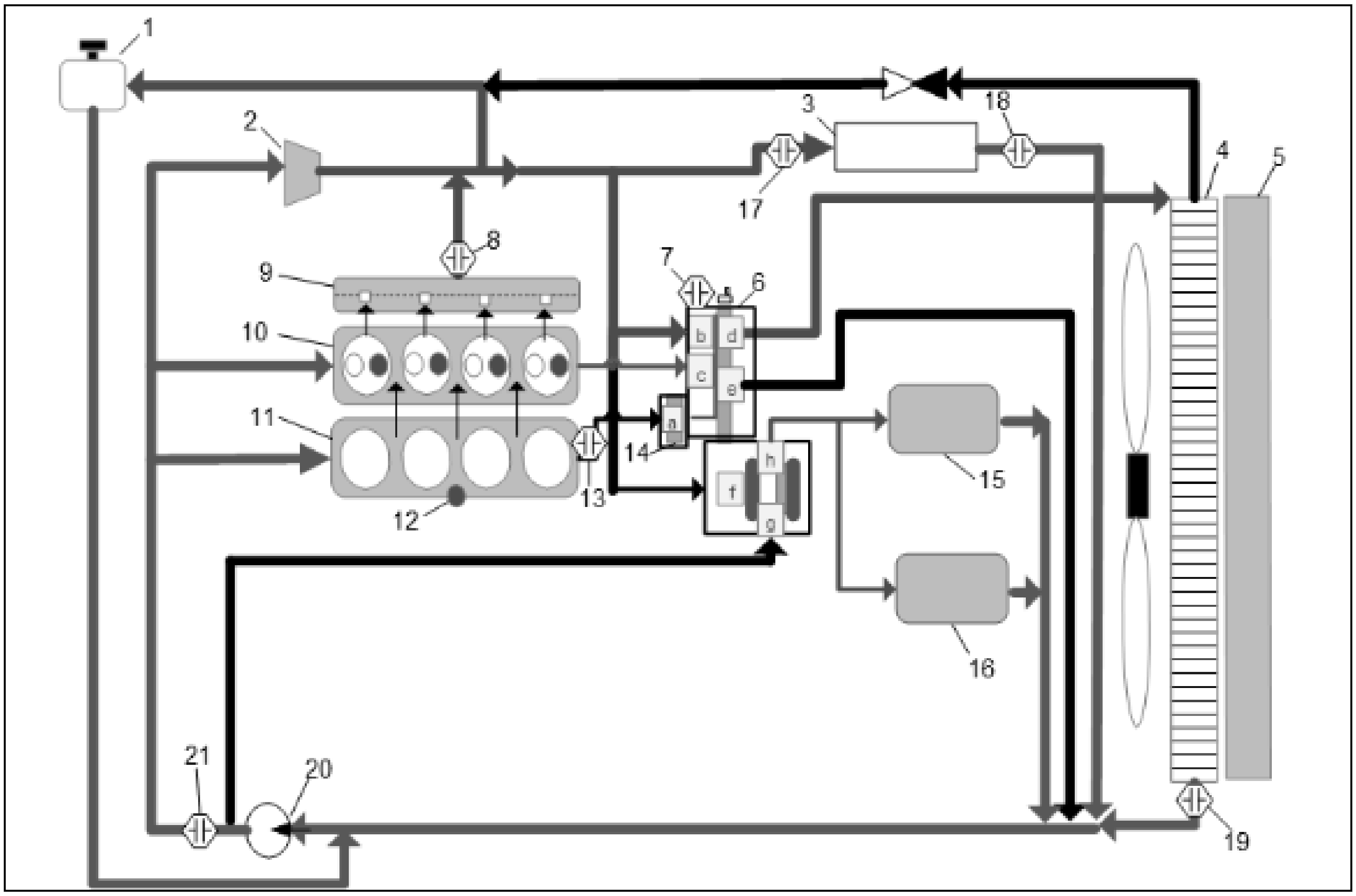
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. Once the optimal combustion chamber temperature has been reached, warmed coolant can be used to quickly raise the engine and transmission to their optimal temperatures. The engine coolant flow control valve will still allow flow through the cylinder head with the open radiator bypass loop but will now also allow coolant flow to the engine/transmission oil heat exchangers. Coolant flow from the bypass and heat exchangers returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Bypass Radiator and Oil Heating
Block Rotary Control Valve	Position-Controlled

Mode 5 (Engine-Demand Cooling With Cabin Heating And Oil Heating):

Flow Diagram - Mode 5



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(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

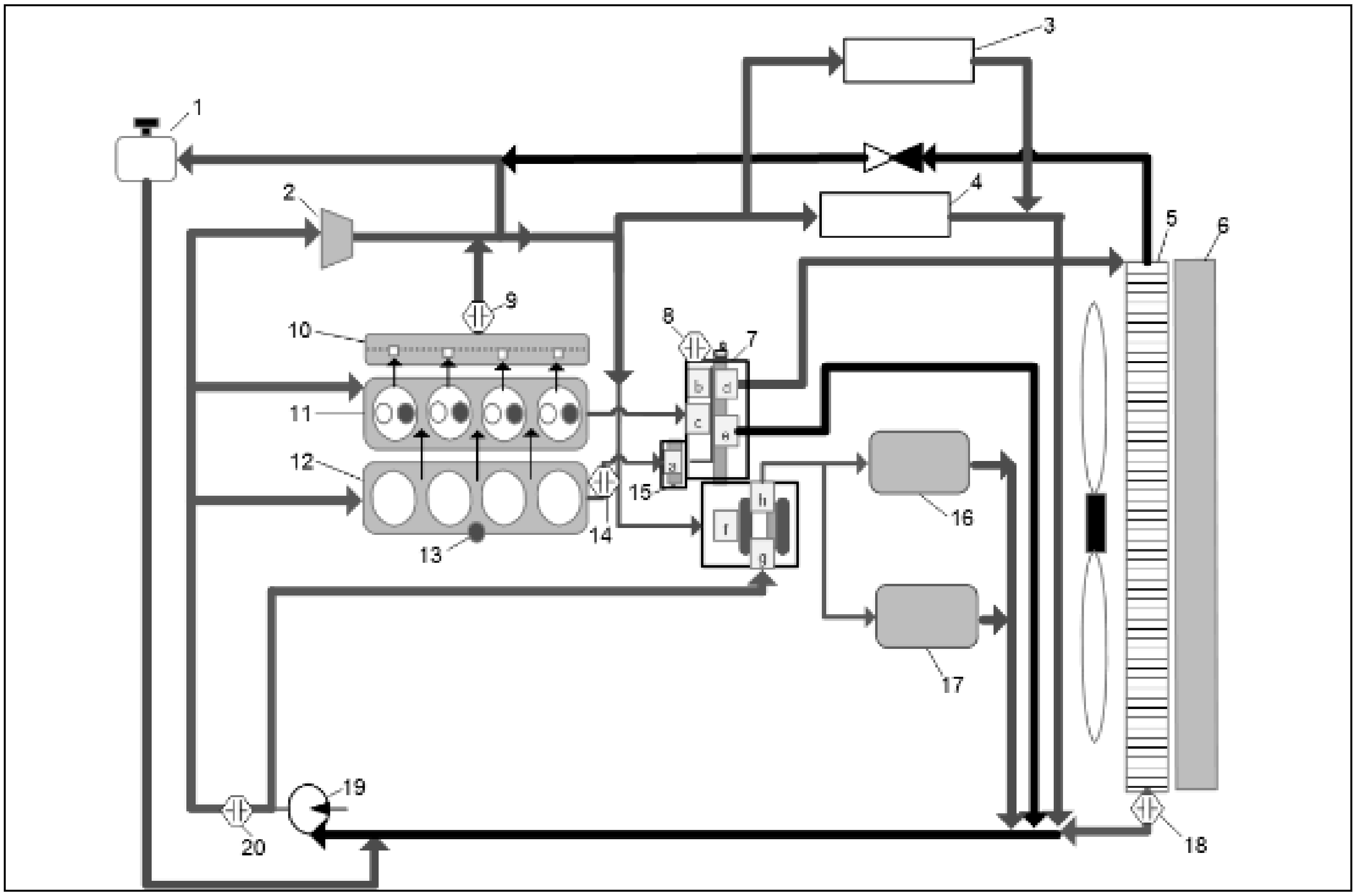
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. At this point, the combustion chamber temperature has reached its optimal temperature and the engine needs to dissipate heat through the radiator. Based on engine temperature, the engine coolant flow control valve will split the flow between the radiator and bypass in a ratio necessary to maintain optimal engine temperatures. Additionally, coolant flow will continue to flow to the engine/transmission oil heat exchangers. Engine oil and transmission oil can take significantly longer time to reach optimal temperatures after the engine is already warmed. Coolant flow from the radiator, bypass, and heat exchangers returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Position-Controlled with Oil Heating
Block Control Valve	Position-Controlled

Mode 6 (Engine-Demand Cooling With Cabin Heating And Oil Cooling):

Flow Diagram - Mode 6



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(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. In extreme hot driving conditions, the engine and transmission become extremely hot and their oils need to be cooled. The engine coolant flow control valve will continue to split the flow between the radiator and bypass in a ratio necessary to maintain optimal engine temperatures and will now allow colder coolant directly from the electric water pump to flow to the engine/transmission oil heat exchangers. Coolant flow from the radiator, bypass, and heat exchangers returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Position-Controlled with Oil Cooling
Block Control Valve	Position-Controlled

Mode 7 (After Run Cooling):

The after run mode is after key off and is needed only after extreme hot conditions with high engine, oil and coolant temperatures. For after run mode, the same valve positions are used as in Mode 6, but the electric water pump is run at a lower speed to continue cooling.

COMPONENT	CONDITION
Electric Water Pump	Low Speed
Main Rotary Coolant Valve	Max Cooling
Block Control Valve	Open

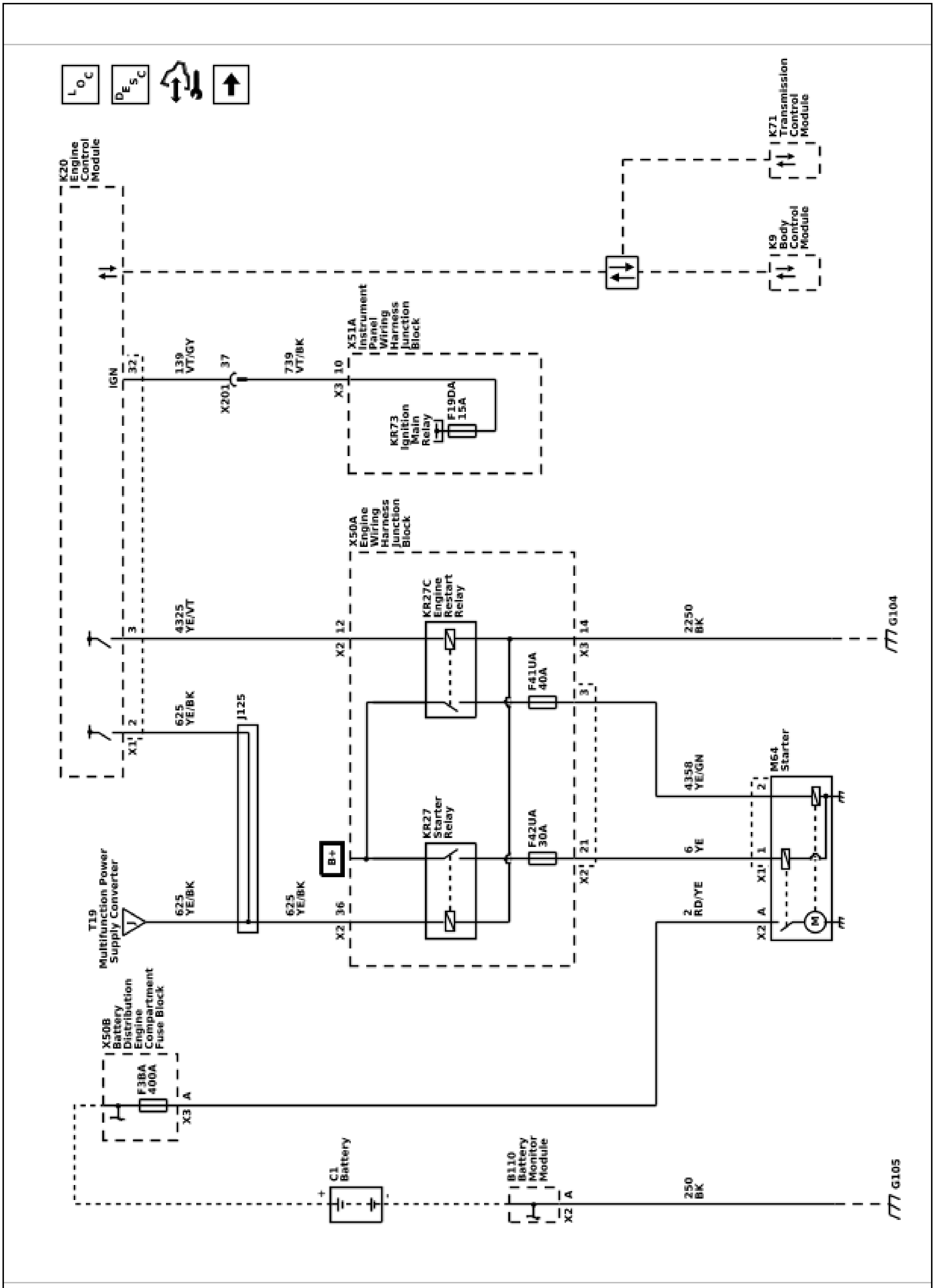
SHUT DOWN

At engine shutdown, the control valves remain open to permit radiator flow and allow coolant service fill by gravity alone. Both control valves also undergo an diagnostic check after engine shutdown, which is sometimes audible.

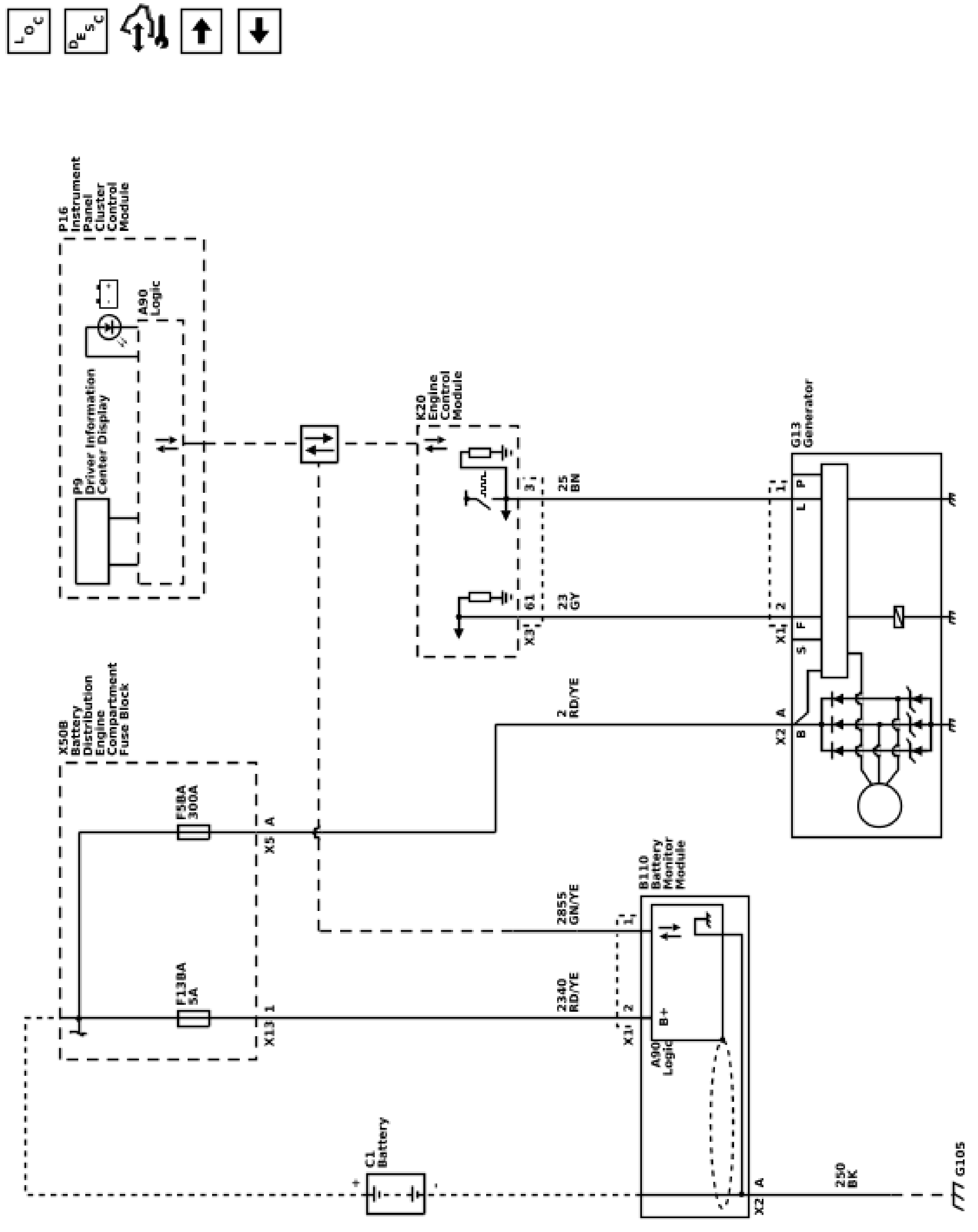
Starting, Charging, and Low Voltage Energy Storage

Schematic and Routing Diagrams

Starting and Charging Schematics (Starting)

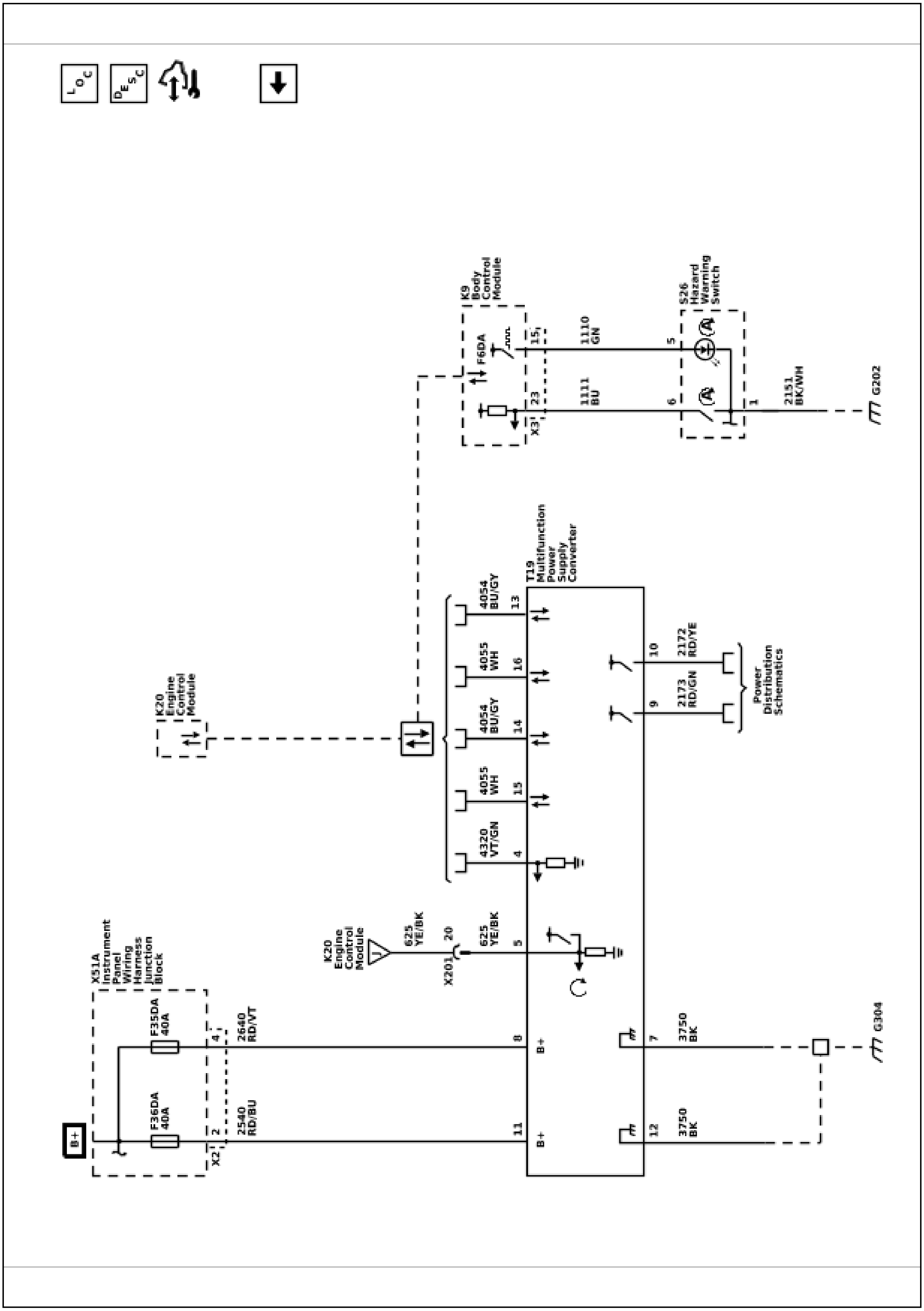

6853135
K20 Engine Control Module
IGN
32
3
2
X1
139 VT/GY
X201
37
739 VT/BK
X3 10
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F19DA 15A
K9 Body Control Module
K71 Transmission Control Module
X50A Engine Wiring Harness Junction Block
4325 YE/VT
X2 12
KR27C Engine Restart Relay
X3 14
2250 BK
G104
F41UA 40A
3
625 YE/BK
J125
4358 YE/GN
M64 Starter
2
T19 Multifunction Power Supply Converter
625 YE/BK
625 YE/BK
X2 36
B+
KR27 Starter Relay
F42UA 30A
X2 21
6 YE
X1 1
2 RD/YE
X2 A
M
X50B Battery Distribution Engine Compartment Fuse Block
F38A 400A
X3 A
C1 Battery
+
-
B110 Battery Monitor Module
X2 A
250 BK
G105

Starting and Charging Schematics (Charging)


LOC
DESC
P16 Instrument Panel Cluster Control Module
A90 Logic
P9 Driver Information Center Display
K20 Engine Control Module
X3
3
61
25 BN
23 GY
G13 Generator
X1
1
2
P
L
F
S
X2
A
B
2 RD/YE
X50B Battery Distribution Engine Compartment Fuse Block
F58A 300A
F13BA 5A
X5 A
X13 1
2855 GN/YE
2340 RD/YE
B110 Battery Monitor Module
B+
A90 Logic
C1 Battery
+
-
250 BK
G105

6853136

Starting and Charging Schematics (Stop/Start System)


6853137
LOC
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X51A Instrument Panel Wiring Harness Junction Block
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F35DA 40A
X2
2
4
2540 RD/BU
2640 RD/VT
K20 Engine Control Module
625 YE/BK
20
X201
625 YE/BK
5
8
B+
11
B+
T19 Multifunction Power Supply Converter
4320 VT/GN
4
4055 WH
15
4054 BU/GY
14
4055 WH
16
4054 BU/GY
13
K20 Engine Control Module
K9 Body Control Module
F6DA
X3
23
15
1111 BU
1110 GN
6
5
S26 Hazard Warning Switch
1
2151 BK/WH
G202
9
2173 RD/GN
10
2172 RD/YE
Power Distribution Schematics
7
3750 BK
12
3750 BK
G304

Description and Operation

Battery Description and Operation

Warning: Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- ***Always shield your eyes and avoid leaning over the battery whenever possible.***
- ***Do not expose the battery to open flames or sparks.***
- ***Do not allow the battery electrolyte to contact the eyes or the skin. Flush immediately and thoroughly any contacted areas with water and get medical help.***
- ***Follow each step of the jump starting procedure in order.***
- ***Treat both the booster and the discharged batteries carefully when using the jumper cables.***

Batteries that are no longer wanted must be disposed of by an approved battery recycler and must never be thrown in the trash or sent to a landfill.

Batteries that are not part of the vehicle itself, not the battery under the hood, must only be transported on public streets for business purposes via approved hazardous material transportation procedures.

Battery storage, charging and testing facilities in repair shops must meet various requirements for ventilation, safety equipment, material segregation, etc.

The maintenance free battery is standard. There are no vent plugs in the cover. The battery is completely sealed except for 2 small vent holes in the side. These vent holes allow the small amount of gas that is produced in the battery to escape.

The battery has 3 functions as a major source of energy:

- Engine cranking
- Voltage stabilizer
- Alternate source of energy with generator overload

Battery Low Start Vehicle Message

The body control module (BCM) monitors battery positive voltage to determine battery state of charge. If one or more of the BCM battery positive voltage terminals measure less than approximately 11.6V compared to the BCM ground circuits, this message will display and four chimes may sound. Start the vehicle immediately. If the vehicle is not started and the battery continues to discharge, the climate controls, heated seats, and audio systems will shut off and the vehicle may require a jump start. These systems will function again after the vehicle is started.

Battery Ratings

A battery has 2 ratings:

- Cold cranking amperage
- Amperage hours

When a battery is replaced use a battery with similar ratings. See battery specification label on the original battery.

Amperage Hours

The amperage hour rating tells you how much amperage is available when discharged evenly over a 20 hour period. The amperage hour rating is cumulative, so in order to know how much constant amperage the battery will output for 20 h, you have to divide the amperage hour rating by 20. Example: If a battery has an amperage hour rating of 74, dividing by 20 = 3.75. Such a battery can carry a 3.75 A load for 20 hours before dropping to 10.5 V. (10.5 V is the fully discharged level, at which point the battery needs to be recharged). A battery with an amperage hour rating of 55 will carry a 2.75 A load for 20 hours before dropping to 10.5 V.

Cold Cranking Amperage

The cold cranking amperage is an indication of the ability of the battery to crank the engine at cold temperatures. The cold cranking amperage rating is the minimum amperage the battery must maintain for 30 seconds at −18°C (0°F) while maintaining at least 7.2 V. See battery label for the cold cranking amperage rating of this battery.

Charging System Description and Operation

Electrical Power Management Overview

The electrical power management system is designed to monitor and control the charging system and send diagnostic messages to alert the driver of possible problems with the battery and generator. This electrical power management system primarily utilizes existing on-board computer capability to maximize the effectiveness of the generator, to manage the load, improve battery state-of-charge and life, and minimize the system's impact on fuel economy. The electrical power management system performs 3 functions:

- Monitor the battery voltage and estimate the battery condition
- Take corrective actions by boosting idle speeds, and adjusting the regulated voltage
- Perform diagnostics and driver notification

The battery condition is estimated during ignition/vehicle off and during ignition/vehicle on. During ignition/vehicle off the state-of-charge of the battery is determined by measuring the open-circuit voltage. The state-of-charge is a function of the acid concentration and the internal resistance of the battery, and is estimated by reading the battery open circuit voltage when the battery has been at rest for several hours.

Any time the ignition/vehicle is on, the vehicle algorithm continuously estimates battery state-of-charge based on adjusted net amp hours, battery capacity, initial state-of-charge, and calculated temperature.

While the engine is running, the battery degree of discharge is primarily determined by the integrated battery current sensor, to obtain net amp hours.

In addition, the electrical power management function is designed to perform regulated voltage control to improve battery state-of-charge, battery life, and fuel economy. This is accomplished by using knowledge of the battery state-of-charge and temperature to set the charging voltage to an optimum battery voltage level for recharging without detriment to battery life.

Charging System Components

G13 Generator
The engine drive belt drives the generator. When the rotor is spun, it induces an alternating current (AC) into the stator windings. The AC voltage is then sent through a series of diodes for rectification. The rectified voltage has been converted into a direct current (DC) for use by the vehicles electrical system to maintain electrical loads and the battery charge.
The voltage regulator integral to the generator controls the output of the generator; It is not serviceable.
The voltage regulator controls the amount of current provided to the rotor. If the generator has field control circuit fault, the generator defaults to an output voltage of 13.8 V.

The generator is serviced as a complete assembly. If there is a diagnosed fault in the generator, it must be replaced as an assembly.

Generator Pulley
The pulley drives the Generator via the engine drive belt. There are 2 types of pulleys:

1. Conventional solid Pulley which is bolted to the Generator stator shaft. This Pulley can be serviced separately.

2. One Way Clutch Pulley or Overrunning Alternator Decoupler Pulley allows the Generator to spin freely when the engine rapidly slows down on sudden deceleration. This part is not serviceable and the Generator needs to be replaced as an assembly.

K9 Body Control Module (BCM)
The K9 Body Control Module communicates with the K20 Engine Control Module and the instrument cluster for electrical power management operation. The BCM determines the output of the generator and sends the information to the ECM for control of the generator turn on signal circuit. It monitors the generator field duty cycle signal circuit information sent from the ECM for control of the generator. It monitors the battery current sensor, the battery positive voltage circuit, and estimates battery temperature to determine battery state of charge. The BCM also performs idle boost.

B110 Battery Monitor Module
The Battery Monitor Module communicates to the BCM via LIN. The BCM shares this information with the ECM. The purpose of the battery sensor module is to transmit battery information that the BCM/ECM can use to make decisions regarding stop/start, battery saver mode, and load shedding.

K20 Engine Control Module (ECM)
When the engine is running, the generator turn-on signal is sent to the generator from the ECM, turning on the regulator. The generator's voltage regulator controls current to the rotor, thereby controlling the output voltage. The rotor current is proportional to the electrical pulse width supplied by the regulator. When the engine is started, the regulator senses generator rotation by detecting AC voltage at the stator through an internal wire. Once the engine is running, the regulator varies the field current by controlling the pulse width. This regulates the generator output voltage for proper battery charging and electrical system operation. The generator field duty terminal is connected internally to the voltage regulator and externally to the ECM. When the voltage regulator detects a charging system problem, it grounds this circuit to signal the ECM that a problem exists. The ECM monitors the generator field duty cycle signal circuit,

and receives control decisions based on information from the BCM.

P16 Instrument Cluster
As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

The instrument cluster also provides customer notification if there is a concern with the charging system. There are two means of notification: a charge indicator on the instrument cluster and/or a service system message displayed on the Driver Information Center (DIC) if equipped.

Charging System Operation

The purpose of the charging system is to maintain the battery charge and vehicle loads. There are 6 modes of operation and they include:

- Battery Sulfation Mode
- Charge Mode
- Fuel Economy Mode
- Head lamp Mode
- Start Up Mode
- Voltage Reduction Mode

The ECM Controls the Generator through the generator turn–on signal circuit, also known as the Generator L-terminal. The ECM monitors the generator performance though the Generator field duty cycle signal circuit, also known as the generator F-terminal.

The Generator turn–on signal (Generator L-terminal) is a Pulse Width Modulation (PWM) signal of 128 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–95%. 0–5% and 95–100% are for diagnostic purposes, with 0–5% monitoring for an open circuit and 95–100% monitoring for a short to ground at a fixed 13.8 V. The following table shows the commanded duty cycle and output voltage of the Generator:

Commanded Duty Cycle	Generator Output Voltage (+/- .25 V)
0–5%	13.8 V
10%	11 V
20%	11.56 V
30%	12.13 V
40%	12.69 V
50%	13.25 V
60%	13.81 V
70%	14.38 V
80%	14.94 V
90%	15.5 V
95–100%	13.8 V

The Generator provides a PWM feedback signal of the Generator voltage output through the Generator field duty cycle signal circuit to the ECM. This information is sent to the Body Control Module (BCM). The Generator field duty cycle signal (Generator F-terminal) is a PWM signal of 60–460 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–100%. 0–5% is reserved for diagnostic purposes.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage displayed in the DIC to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

Charging System Modes

Battery Sulfation Mode
The BCM will enter this mode when the interpreted Generator output voltage is less than 13.2 V for 45 minutes. When this condition exists the BCM will enter Charge Mode for 2–3 minutes. The BCM will then determine which mode to enter depending on voltage requirements.

Charge Mode
The BCM will enter Charge Mode when ever one of the following conditions are met:

- Windshield wipers are ON for more than 3 s.
- Climate Control Voltage Boost Mode Request is true, as sensed by the HVAC control module via serial data. High speed cooling fan, rear defogger, and HVAC high speed blower operation can cause the BCM to enter the Charge Mode.
- The estimated battery temperature is less than 0°C (32°F).
- Battery State of Charge is less than 80%.
- Vehicle speed is greater than 145 km/h (90 mph)
- A current sensor malfunction exists.
- System voltage is determined to be below 12.56 V

When any one of these conditions is met, the system will set targeted generator output voltage to a charging voltage between 13.9–15.5 V, depending on the battery state of charge and estimated battery temperature.

Fuel Economy Mode

The BCM will enter Fuel Economy Mode when the estimated battery temperature is at least 0°C (32°F) but less than or equal to 80°C (176°F), the calculated battery current is less than 15 A and greater than −8 A, and the battery state-of-charge is greater than or equal to 80%. Its targeted generator output voltage is the open circuit voltage of the battery and can be between 12.5–13.1 V. When fuel economy mode is active, the generator is not charging, only maintaining open circuit battery voltage. The BCM will exit this mode and enter Charge Mode when any of the conditions described above are present.

Headlamp Mode

The BCM will enter Headlamp Mode when ever the head lamps are ON (high or low beams). Voltage will be regulated between 13.9–14.5 V.

Start Up Mode

When the engine is started the BCM sets a targeted generator output voltage of 14.5 V for 30 s.

Tow/Haul Mode (if applicable)

Pressing the Tow/Haul Mode button located on the center stack, the vehicle system voltage is raised and the remote (non-vehicle) battery will be charged. Having the headlamps on will raise the system voltage and if the Tow/Haul button is applied it will not serve any purpose. The voltage is regulated between 13.9-14.5 V.

Instrument Cluster Operation

Charge Indicator Operation

The instrument cluster illuminates the charge indicator and displays a warning message in the driver information center if equipped, when the one or more of the following occurs:

- The ECM detects that the generator output is less than 11 V or greater than 16 V. The instrument cluster receives a serial data message from the ECM requesting illumination.
- The instrument cluster determines that the system voltage is less than 11 V or greater than 16 V for more than 30 s. The instrument cluster receives a serial data message from the BCM indicating there is a system voltage range concern.
- The instrument cluster performs the displays test at the start of each ignition cycle. The indicator illuminates for approximately 3 s.

Driver Information Center Message: BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM

The BCM and the ECM will send a serial data message to the driver information center for the BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM message to be displayed. It is displayed when a charging system DTC is a current DTC. The message is turned off when the conditions for clearing the DTC have been met.

Voltmeter Gauge and/or System Voltage Display (if equipped)

As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage display in the driver information center to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

Electrical Power Management Description and Operation

Electrical Power Management

The electrical power management is used to monitor and control the charging system and alert the driver of possible problems within the charging system. The electrical power management system makes the most efficient use of the generator output, improves the battery state-of-charge, extends battery life, and manages system electrical loads.

The load shed operation is a means of reducing electrical loads during a low voltage or low battery state-of-charge condition.

The idle boost operation is a means of improving generator performance during a low voltage or low battery state-of-charge condition.

Each electrical power management function, either idle boost or load shed, is activated in incremental steps. For example, idle boost 1 must be active before idle boost 2 can be active. The criteria used by the body control module (BCM) to regulate electrical power management are outlined below:

Idle Boost and Load Shed With Current Sensor

Function	Battery Temperature Calculation	Battery Voltage Calculation	Amp-Hour Calculation	Action Taken
Idle Boost 1 Start	Less Than −15°C (5°F)	Less Than 13 V	—	First level Idle boost requested
Idle Boost 1 Start	—	—	Battery has a net loss greater than 0.6 Ah	First level Idle boost requested
Idle Boost 1 Start	—	Less Than 11 V	—	First level Idle boost requested
Idle Boost 1 End	Greater Than −10°C (14°F)	Greater Than 12 V	Battery has a net loss less than 0.2 Ah	First level Idle boost request cancelled
Idle Boost 2 Start	—	—	Battery has a net loss greater than 1.6 Ah	Second level Idle boost requested
Idle Boost 2 Start	—	Less Than 11 V	—	Second level Idle boost requested
Idle Boost 2 End	—	Greater Than 12 V	Battery has a net loss less than 0.8 Ah	Second level Idle boost request cancelled
Load Shed 1 Start	—	—	Battery has a net loss of 4 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 End	—	Greater Than 12 V	Battery has a net loss of less than 2 Ah	Clear Load Shed 1
Idle Boost 3 Start	—	—	Battery has a net loss of 10 Ah	Third level Idle boost requested
Idle Boost 3 Start	—	Less Than 11 V	—	Third level Idle boost requested
Idle Boost 3 End	—	Greater Than 12 V	Battery has a net loss of less than 6.0 Ah	Third level Idle boost request cancelled
Load Shed 2 Start	—	—	Battery has a net loss greater than 12 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 End	—	Greater Than 12 V	Battery has a net loss of less than 8 Ah	Clear Load Shed 2
Load Shed 3 Start	—	Less Than 11.9 V	Battery has a net loss greater than 20 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC

Function	Battery Temperature Calculation	Battery Voltage Calculation	Amp-Hour Calculation	Action Taken
Load Shed 3 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 3 End	—	Greater Than 12.6 V	Battery has a net loss of less than 13 Ah	Clear Load Shed 3

Idle Boost and Load Shed Without Current Sensor (based on battery voltage)

Function	Battery Temperature Calculation	Battery Voltage Calculation	Action Taken
Idle Boost 1 Start	Less Than −15°C (5°F)	Less Than 13 V	First level Idle boost requested
Idle Boost 1 Start	—	Less Than 12.6 V	First level Idle boost requested
Idle Boost 1 End	Greater Than −15°C (5°F)	—	First level Idle boost request cancelled
Idle Boost 1 End	—	Greater Than 13 V	First level Idle boost request cancelled
Idle Boost 2 Start	—	Less Than 12.4 V	Second level Idle boost requested
Idle Boost 2 End	—	Greater Than 12.5 V	Second level Idle boost request cancelled
Load Shed 1 Start	—	Less Than 12.3 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 End	—	Greater Than 12.4 V	Clear Load Shed 1
Idle Boost 3 Start	—	Less Than 10 V	Third level Idle boost requested
Idle Boost 3 End	—	Greater Than 12.3 V	Third level Idle boost request cancelled
Load Shed 2 Start	—	Less Than 12.1 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 End	—	Greater Than 12.2 V	Clear Load Shed 2
Load Shed 3 Start	—	Less Than 11.9 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 3 End	—	Greater Than 12.0 V	Clear Load Shed 3

Starting System Description and Operation

Starter Motor Operation (Without KL9)

The starter motors are non-repairable. They have pole pieces that are arranged around the armature. Both solenoid windings are energized. The pull-in winding circuit is completed to the ground through the starter motor. The windings work together magnetically to pull and hold in the plunger. The plunger moves the shift lever. This action causes the starter drive assembly to rotate on the armature shaft spline as it engages with the flywheel ring gear on the engine. Moving at the same time, the plunger also closes the solenoid switch contacts in the starter solenoid. Full battery voltage is applied directly to the starter motor and it cranks the engine.

As soon as the solenoid switch contacts close, current stops flowing thorough the pull-in winding because battery voltage is applied to both ends of the windings. The hold-in winding remains energized. Its magnetic field is strong enough to hold the plunger, shift lever, starter drive assembly, and solenoid switch contacts in place to continue cranking the engine. When the engine starts, pinion overrun protects the armature from excessive speed until the switch is opened.

When the crank signal is removed, the starter relay opens and battery voltage is removed from the starter solenoid S terminal. Current flows from the motor contacts through both windings to the ground at the end of the hold-in winding. However, the direction of the current flow through the pull-in winding is now opposite the direction of the current flow when the winding was first energized.

The magnetic fields of the pull-in and hold-in windings now oppose one another. This action of the windings, along with the help of the return spring, causes the starter drive assembly to disengage and the solenoid switch contacts to open simultaneously. As soon as the contacts open, the starter circuit is turned off.

Enhanced Starter Motor Operation (KL9)

The Engine Stop/Start system in GM vehicles automatically turns off the engine when the vehicle comes to a stop under certain driving conditions, and can quickly restart the engine in about 0.3 seconds when commanded to do so.

In order to smoothly restart the engine as quickly as possible while managing the greater number of engine starts, the Stop/Start system uses an enhanced starter motor that operates differently from a conventional starter motor. It has a high performance electric motor and a stronger pinion engagement mechanism than a conventional starter. It also has independent control of the pinion and motor.

The enhanced starter motor continues using the typical pinion engagement mechanism with a starter solenoid that drives the pinion gear to engage or disengage the flywheel of the engine. When engaged, the starter motor can rotate the engine flywheel and, in turn, the crankshaft.

On the enhanced starter of a Stop/Start system the operation is done in two separate functions inside the solenoid, Starter Motor and Pinion Actuator. Each function controlled individually by the ECM. There are two separate relays to control the two separate parts of the enhanced solenoid:

- KR27 Starter Motor Relay
- KR27C Starter Pinion Actuator Relay

The two individually-controlled relays allow for smooth engagement of the pinion gear into the flywheel with minimum noise and wear.

When the vehicle is coming to a stop, just before the engine stops rotating (at approximately 50 RPM) during stop/start operation, the ECM energizes the Starter Pinion Solenoid Actuator Relay to easily push the pinion gear into the flywheel gear without gear clash. (Fig. 8) When the engine stops rotating during Stop/Start operation (Auto Stop mode), the starter pinion gear is fully engaged, ready for the starter motor to become energized to quickly start the engine again.

A secondary need for the starter pinion to be driven into the flywheel gear before the engine stops rotating is to address quickly changing demands on the engine. For example, when a driver is slowing nearly to a stop — and the Stop/Start system is preparing for Auto Stop mode — but suddenly decides to release the brake and accelerate

In this situation, the engine has already stopped rotating, or nearly so. A conventional starter cannot restart the engine until the engine has completely stopped. However, with the enhanced starter, the starter pinion gear is fully engaged and ready to begin rotating the engine even before it fully stops turning. Otherwise, the engine would actually have to stop rotating before the pinion can engage smoothly to begin a restart.

To prevent a lag in engine operation, the ECM uses predictive speed matching of the flywheel gear speed and the pinion gear speed to engage the pinion gear into the flywheel gear without gear clash before the engine fully stops. By predicting how long it takes the starter motor to spin up using an algorithm, the pinion gear speed can be matched to the flywheel gear speed. The result is an almost instant restart that is possible at extremely low engine speeds.

Ignition Switch

Keyless Start

When the Ignition mode switch is placed in the crank position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the crank position. The BCM then sends a serial data message to the engine control module (ECM) that crank has been requested. The ECM then verifies that the brake pedal is applied and for manual transmission the clutch is fully depressed or for automatic transmission is in Park/Neutral. If it is, the ECM then supplies 12 V to the control circuit of the starter relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

Key Start

When the ignition switch is placed in the Start position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the Start position. The BCM then sends a message to the engine control module (ECM) notifying it that CRANK has been requested. The ECM verifies that the transmission is in Park or Neutral. If it is, the ECM then supplies 12 V to the control circuit of the crank relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

Stop/Start System Description and Operation

The Stop/Start System is used to improve fuel efficiency in stop/start driving. The vehicle automatically shuts down the engine in appropriate conditions at a traffic light, for example, resulting in zero tail pipe emissions and saving fuel which otherwise is used idling the engine when stationary. The engine instantly restarts when the driver is ready to move away.

As soon as the driver prepares to move away (by releasing the brake pedal and/or depressing the accelerator pedal), the engine will start; it only takes the system around 0.3 s to start the engine.

To support the increased number of engine starts, the starter motor is upgraded with a high performance electric motor and a stronger pinion engagement mechanism with reduced noise levels.

Along with the upgraded starter motor, advanced battery technology is required to ensure the vehicles battery can handle the frequent charge and discharge cycles common with stop/start operation. There is battery sensor module connected to the battery which continually monitors the battery charge and healthy state. The Engine Control Module (ECM) uses this information from the battery sensor module to determine if the battery charge and health is sufficient for an Stop/Start condition.

The Stop/Start system can reduce fuel consumption and carbon dioxide (CO2) emissions by up to 5% in mixed driving conditions. In an urban environment and in heavy traffic with frequent stops the savings may increase to as much as 10%.

There are also sophisticated controls in place to help ensure the Stop/Start System does not compromise the needs of either the driver or vehicle. For the engine to shutdown, the vehicle must be below 5 km/h (3 MPH), the selector lever in position D, and brake pedal depressed. To restart, the driver simply releases the brake pedal and the enhanced starter motor engages the engine. When the engine has been shut down by the Stop/Start System, a control indicator will be illuminated in the Driver Information Center (DIC). When the engine is restarted, the control indicator in the DIC extinguishes.

To ensure neither the needs of the driver or vehicle are compromised the engine will not shut down in the following circumstances:

- Ambient and coolant temperature correlation does not match specified values.
- Ambient temperature is less than −10°C (14°F)
- Battery temperature is less than 0°C (32°F) or greater than 55°C (131°F)
- Driver seat belt is not fastened and the drivers door is not fully closed (not applicable to vehicles in North America)
- HVAC system demand is high
- HVAC defrost has been selected
- Battery charge is low

Likewise the engine will automatically restart if:

- Driver door opened and driver seat belt unbuckled (not applicable to vehicles in North America)
- Engine hood opened
- Battery charge is low
- HVAC demand increases
- Vehicle speed increases
- Brake booster vacuum has been reduced
- Engine coolant temperature is greater than 125°C (257°F)
- Economy mode turned OFF by driver
- Autostop time exceeded 2 min

When the Stop/Start System has shut down the engine, and the ambient temperature is below 15°C (59°F), the ECM will activate the Stop/Start auxiliary relay which controls the electric engine coolant pump motor to continually circulate the engine coolant through the engine while the engine is off. This is to ensure the engine and passenger compartment temperature is maintained while off. Once the Stop/Start System has restarted the engine, the ECM will turn off the electric coolant pump motor, thus allowing the engines internal coolant pump to circulate the engine coolant. The Stop/Start System is automatically activated each time the ignition switch is turned on.

Through the climate control system, the vehicle can be cycled between off, comfort, and eco air conditioning modes (if equipped). In comfort mode, the priority for Stop/Start operation is on customer comfort. Depending on ambient temp, humidity, cabin temperature and cabin temperature setpoint, the least amount of autostops occur in this mode. In eco mode, the priority is on fuel economy. There are more frequent autostops with some sacrificing of cabin temperature control. With the HVAC turned off, the maximum autostops occur since there will be no A/C compressor requests.

Autostop Criteria

The ECM will send an Autostop state message to the body control module (BCM) and shut down the engine when all of the following criteria is met. The BCM will transmit the Autostop state message to the instrument cluster which will display the Autostop indicator in the tachometer display.

- Initial minimum vehicle speed during drive cycle must be 19 km/h (12 MPH) or greater. Subsequent autostop minimum speed may vary from 2-10 km/h (1-6 MPH), depending on vehicle
- Ambient and engine coolant temperature correlation meets specified values.
- Ambient and transmission fluid temperature correlation meets specified values.
- Hood switch status is closed
- Driver door status is closed
- Driver seat belt status is buckled
- Brake booster vacuum is greater than 45 kPa (7 PSI)
- Transmission gear selector is in the Drive position
- Vehicle speed is less than 5 km/h (3 MPH)
- Engine speed is below 1,500 RPM
- Engine coolant temperature is less than 120°C (248°F)
- Ambient temperature is greater than −10°C (14°F)
- No A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage greater than 12 V
- Battery state of charge greater than 75% (changes with state of health)

Autostop Enable Ambient and Engine Coolant Temperature Table

Ambient Temperature	inimum Coolant Temperature	Autostop Enable
−10°C (14°F)	60°C (140°F)	Yes
0°C (32°F)	50°C (122°F)	Yes
6°C (43°F)	40°C (104°F)	Yes
12°C (54°F)	30°C (86°F)	Yes
20°C (68°F)	18°C (64°F)	Yes
30°C (86°F)	18°C (64°F)	Yes

Autostart Criteria

The ECM will send an Autostart state message to the BCM. If all of the following conditions are true the ECM and BCM will restart the vehicle.

Driver Enabled Conditions that will engage Autostart:

- Driver removes pressure from the brake or depresses the accelerator pedal while the vehicle is in the forward Drive gear

System Enabled Conditions that will engage Autostart

Note: If one or more of the following conditions occur, the system will force the engine to restart.

- Brake booster vacuum is less than 40 kPa (6 PSI)
- A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage less than 11 V,
- Battery state of charge is less than 73% (changes with state of health)

- Driver door status changes to open and driver seat belt status changes to unbuckled (not applicable to vehicles in North America)
- Hood switch status changes to open
- Autostop time exceeded 2 min

If the crank time exceeds 2 s, a manual ignition switch restart will be necessary.

System Components

Engine Control Module (ECM)

The ECM monitors the inputs from the Engine Coolant Temperature (ECT) sensor, Vehicle Speed Sensor (VSS), Battery Sensor Module, hood ajar switch, brake booster vacuum sensor, and engine speed to determine Autostart and Autostop conditions. The ECM also controls the auxiliary coolant pump motor (if equipped).

Transmission Control Module (TCM)

The TCM monitors the inputs from the transmission neutral safety switch to determine the driver selected gear. This information is transmitted to the ECM via serial data to support the Auto Stop Start algorithm.

Engine Coolant Temperature sensor (ECT)

The ECT sensor is used to determine engine operating temperature.

Intake Air Temperature Sensor (IAT)

The ECM uses this sensor to monitor ambient air temperature. If too cold, the Autostop will not occur.

Inside air temperature sensor

The HVAC control module monitors the passenger compartment temperature sensor to determine the temperature inside the passenger compartment. The HVAC control module sends this temperature reading to the ECM on the data communication circuit. The ECM uses this temperature values to determine if a restart is requires based on the temperature inside the passenger compartment.

Vehicle speed sensor

The vehicle speed sensor is used to determine vehicle speed. If vehicle speed is detected above a calculated value during an Autostop condition, the ECM will start the engine.

Hood Ajar Switch

If the hood switch is in the open position, the vehicle will not Autostop. If the hood is opened during Autostop, the vehicle will automatically restart.

Brake Booster Vacuum Sensor

The ECM monitors vacuum in order to ensure proper power assist for the brake pedal. If the ECM determines vacuum is too low, it will restart the engine.

Brake Pedal Position Sensor (BPPS) & Accelerator Pedal Position Sensor (APP)

The ECM monitors both the brake pedal position sensor and the accelerator pedal position sensor to determine the level of activation for each. While the accelerator pedal is in it’s at rest position with no pressure applied by the operator, a partially depressed Brake pedal will cause the ECM to prepare the engine for an Autostop event. When the vehicle is in an auto stop event and the status of the brake pedal position sensor changes from meeting the autostop criteria to not meeting this criteria the engine will be restarted provided all of the other conditions to allow an autostart are met. If the Accelerator pedal is moved from its at rest position the vehicle will also enter an auto start event if all other conditions to support an autostart event, except for the brake pedal position, are met.

Transmission Gear Shift Position Switch

The transmission gear shift position switch is used to determine if the transmission is in the proper state to allow an auto stop/start event. The ECM will not allow Autostop until the brake is engaged, the transmission is in the forward gear position and then the vehicle slows to below the minimum speed required to allow and autostop while meeting all of the other minimum criteria to support an autostop event.

Coolant Pump Motor

The ECM will turn on the auxiliary coolant pump motor during Autostop to maintain engine operating temperature and HVAC temperature. Once the engine is running, the ECM will turn off the coolant pump motor.

Body Control Module (BCM)

The Body Control Module (BCM) monitors the Autostop Disable switch in order to enable or disable the system. It sends the appropriate messages to the ECM Via serial data to enable or disable the system.

Battery Sensor Module

The Battery Sensor Module monitors the battery current load, state of health, and state of charge, the information is sent to the BCM Via LIN then to the ECM Via Serial Data. If the module detects high current load, the battery is in a poor state of health or a low charge condition, the ECM will not allow Autostop to occur.

Autostop Disable Switch

The disable switch is an input to the BCM, it allows the customer to disable or re-enable the Autostop system. After the vehicle is turned off the Autostop system will turn back on the next time the vehicle is started.

Power Supply Transformer

The DC to DC converter monitors battery voltage and will maintain operating voltage to the radio, instrument cluster and instrument panel displays. The DC to DC converter will provide a boosted voltage to sensitive loads during Autostart to ensure proper operation of the driver informational displays.

Instrument Cluster
In order to differentiate between a normal engine shut down (engine speed 0 RPM) and when the engine has been shut down by the Stop/Start System, the tachometer needle will rest at the Autostop indicator icon (500 RPM point) indicating the engine has been shut down by the Stop/Start System. Once the engine is restarted, or the ECO button has disengaged Autostop, the tachometer will function normally.

Section 6

HVAC

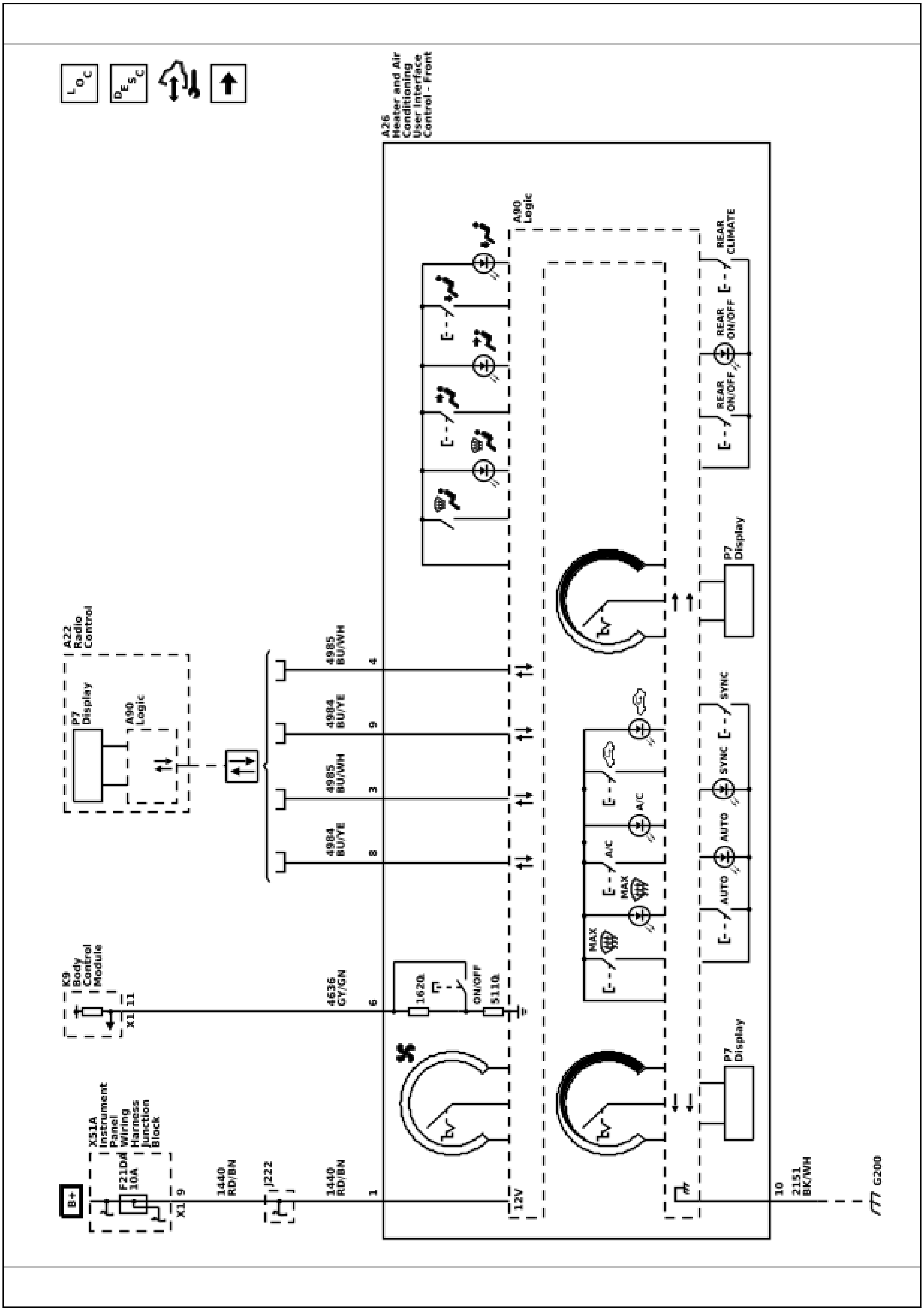
HVAC - Automatic **6-2**
  Schematic and Routing Diagrams **6-2**
    HVAC Schematics 6-3
  Description and Operation **6-8**
    Automatic HVAC Description and Operation 6-8
HVAC - Manual **6-12**
  Schematic and Routing Diagrams **6-12**
    HVAC Schematics 6-13
  Description and Operation **6-18**
    Manual HVAC Description and Operation 6-18

HVAC

HVAC - Automatic

Schematic and Routing Diagrams

HVAC Schematics (Power, Ground, Serial Data and HVAC Controls)



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X51A Instrument Panel Wiring Harness Junction Block
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J222
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1
K9 Body Control Module
X1 11
4636 GY/GN
6
162Ω
ON/OFF
511Ω
A22 Radio Control
P7 Display
A90 Logic
4984 BU/YE
8
4985 BU/WH
3
4984 BU/YE
9
4985 BU/WH
4
A26 Heater and Air Conditioning User Interface Control - Front
A90 Logic
12V
MAX
MAX
A/C
A/C
AUTO
AUTO
SYNC
SYNC
REAR ON/OFF
REAR ON/OFF
REAR CLIMATE
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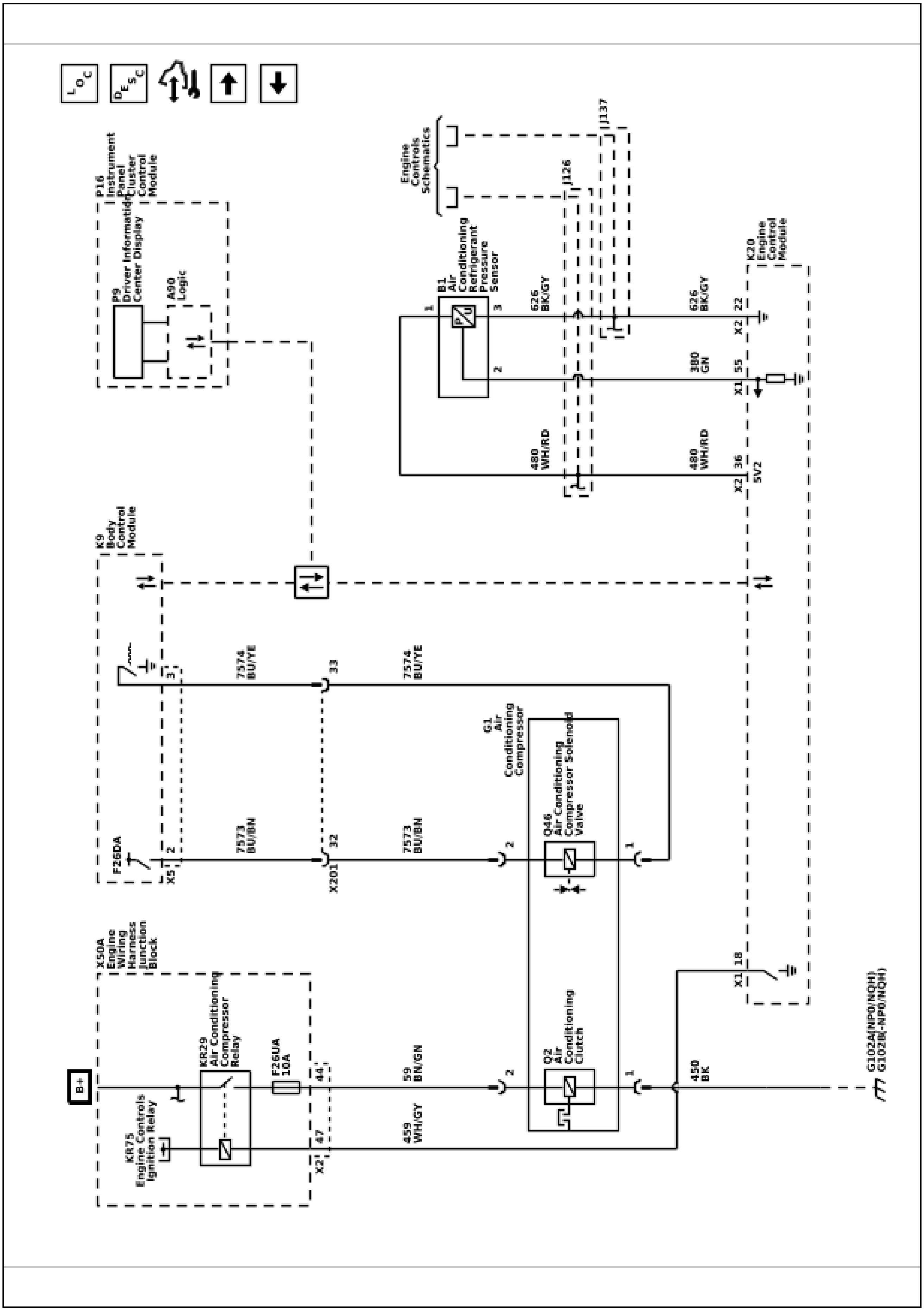
P7 Display
10
2151 BK/WH
G200

6853047

HVAC Schematics (A/C Compressor Controls)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LOC
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A90 Logic
Engine Controls Schematics
J126
J137
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1
2
3
626 BK/GY
380 GN
480 WH/RD
K20 Engine Control Module
X2 22
X1 55
X2 36
5V2
X1 18
K9 Body Control Module
F26DA
X5 2
3
7574 BU/YE
7573 BU/BN
X201 32
33
G1 Air Conditioning Compressor
Q46 Air Conditioning Compressor Solenoid Valve
Q2 Air Conditioning Clutch
X50A Engine Wiring Harness Junction Block
B+
KR29 Air Conditioning Compressor Relay
KR75 Engine Controls Ignition Relay
F26UA 10A
44
47
X2
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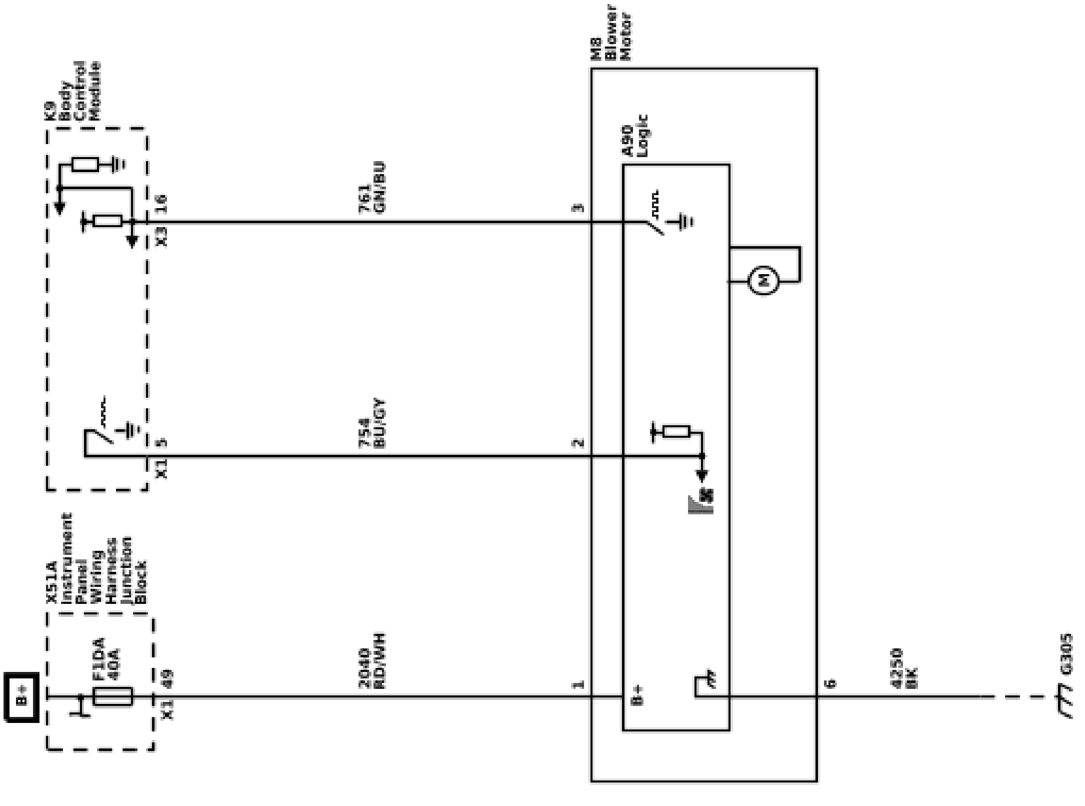
G102A(NP0/NQH)
G102B(-NP0/NQH)

HVAC Schematics (Blower Motor)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754
BU/GY
X51A
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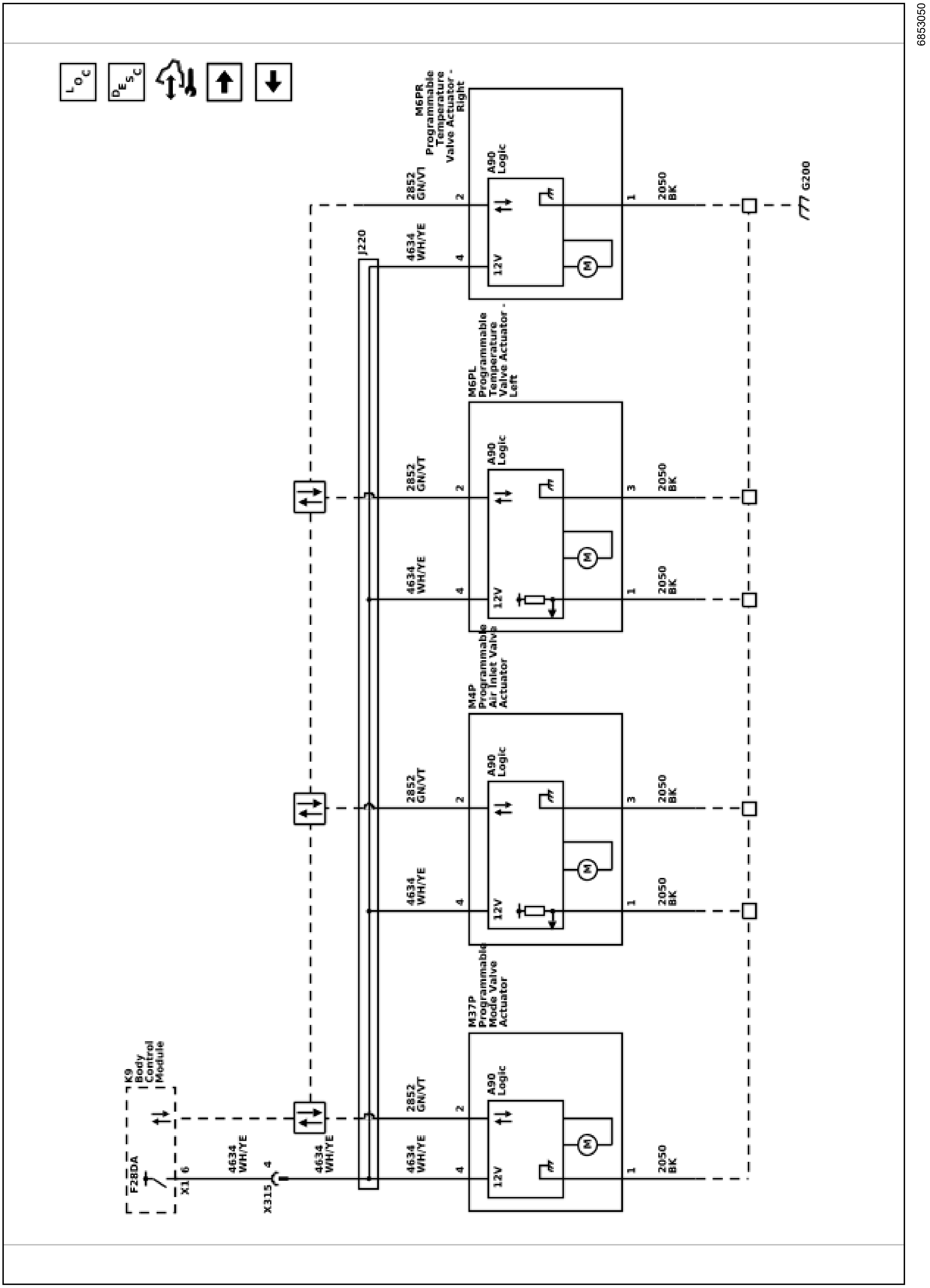
Wiring
Harness
Junction
Block
B+
F1DA
40A
X1 49
2040
RD/WH
M8
Blower
Motor
A90
Logic
3
2
1
6
B+
M
4250
BK
G305

HVAC Schematics (Mode and Temperature Control Actuators)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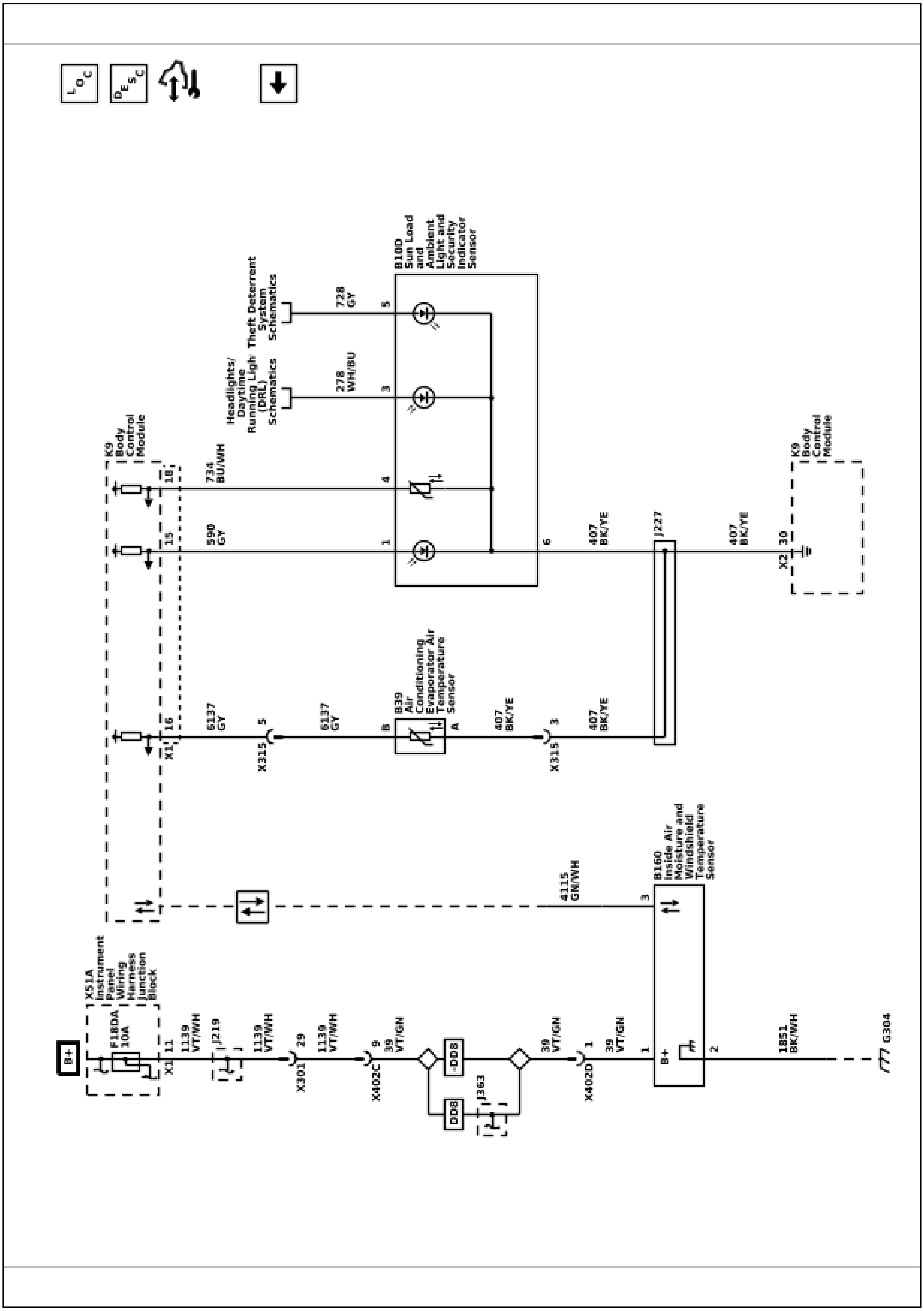
4634 WH/YE
4
X315
4634 WH/YE
J220
2852 GN/VT
4634 WH/YE
2
4
A90 Logic
12V
M
1
2050 BK
3
M37P Programmable Mode Valve Actuator
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator - Left
M6PR Programmable Temperature Valve Actuator - Right
G200

HVAC Schematics (Windshield Sensors and A/C Evaporator Temperature Sensor)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B+
X51A Instrument Panel Wiring Harness Junction Block
F18DA 10A
X1 11
1139 VT/WH
J219
1139 VT/WH
X301 29
1139 VT/WH
X402C 9
39 VT/GN
DD8
DD8
J363
39 VT/GN
X402D 1
39 VT/GN
1
B+
2
1851 BK/WH
G304
B160 Inside Air Moisture and Windshield Temperature Sensor
3
4115 GN/WH
K9 Body Control Module
X1 16
6137 GY
X315 5
6137 GY
B
B39 Air Conditioning Evaporator Air Temperature Sensor
A
407 BK/YE
X315 3
407 BK/YE
15
590 GY
1
18
734 BU/WH
4
Headlights/ Daytime Running Light (DRL) Schematics
278 WH/BU
3
Theft Deterrent System Schematics
728 GY
5
B10D Sun Load and Ambient Light and Security Indicator Sensor
6
407 BK/YE
J227
407 BK/YE
X2 30
K9 Body Control Module

Description and Operation

Automatic HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Heating and A/C Operation
- Recirculation Operation
- Automatic Operation
- Engine Coolant and A/C System Refrigerant

HVAC Control Components

K9 Body Control Module

The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

A26 Heater and Air Conditioning User Interface Control - Front

The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

Actuators

Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, left and right temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

Air Speed and M8 Blower Motor

The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

Afterblow

Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328146-) not found] .

Duct Air Temperature

Physical duct air temperature sensors are not used with the front system. The air temperature in the air distribution ducts is calculated by the BCM based on the engine coolant temperature, coolant flow, evaporator temperature, outside air temperature, solar load, blower motor speed, air inlet door position, and temperature door position information. The BCM uses the values to calculate actuator position.

B39 Air Conditioning Evaporator Air Temperature Sensor

The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

B1 Air Conditioning Refrigerant Pressure Sensor

The A/C refrigerant pressure sensor is a 3-wire piezoelectric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

G1 Air Conditioning Compressor
The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

B160 Inside Air Moisture and Windshield Temperature Sensor
The windshield temperature and inside moisture sensor includes the relative humidity sensor, windshield temperature sensor and humidity sensing element temperature sensor.

This sensor assembly provides information about:

- Relative humidity level at windshield (passenger compartment side)
- Temperature of the windshield (passenger compartment side)
- Temperature of the humidity sensor element

The relative humidity sensor measures the relative humidity of the passenger compartment side of the windshield. It also detects the temperature of the windshield surface on the passenger compartment side. Both values are used as control inputs for the BCM application to calculate the fog risk on windshield compartment side and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield. The humidity sensor element temperature sensor supplies the temperature of the humidity sensor element. It is only needed if the thermal contact between the humidity sensing element and the inside windshield surface is not sufficient.

The sensor is a LIN device, and the sensor values are transmitted to the BCM via serial data.

When equipped with CE1, the sensor is part of the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor LIN windshield sensor array, and the windshield temperature and humidity values are transmitted to the BCM via serial data.

B10D Sun Load Temperature and Ambient Light and Security Indicator Sensor
The ambient light/sunload sensor includes the solar sensor and passenger compartment temperature sensor.

The solar sensor is connected to a low reference and 5 V supply through the BCM. As the sunload increases, the sensor signal voltage also increases and vice versa. The signal provided to the BCM varies between 1.2–4.85 V.

The passenger compartment temperature sensor is a negative temperature coefficient thermistor, connected to a low reference and 5 V supply through the BCM. As the air temperature increases, the sensor resistance decreases. The signal varies between 0–5 V.

Bright or high intensity light can cause the vehicles interior temperature to increase. The HVAC system uses the sensor values and compensates for the increased temperature to maintain the system settings.

Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

Recirculation Operation

The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

In automatic mode the values of the sensors are used as inputs for the BCM to calculate the fog risk on the passenger compartment side of the windshield. The A/C compressor and the defrost mode may be activated to prevent or remove fog on the passenger compartment side of the windshield.

In automatic mode, a partial recirculation mode may be commanded to accelerate cabin heating or cooling and reduce energy usage. The recirculation indicator remains illuminated at all times, regardless of the actual operating mode determined by the system.

Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM
- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

Automatic Operation

In automatic operation, the BCM maintains the comfort level inside of the vehicle by controlling the A/C compressor solenoid, the blower motor, the air temperature actuators, mode actuator and recirculation actuator.

The automatic mode indicator shows that the system is in full automatic operation. If an individual setting is changed (excluding temperature), the automatic indicator will turn off, and that function will enter manual control. All other functions will remain under automatic control unless manually changed.

To put the HVAC system in automatic mode, the following is required:

1. The auto switch must be activated.

2. The air temperature switch must not be in either the full hot or full cold position.

Once the desired temperature is reached, the blower motor, mode, recirculation and temperature actuators automatically adjust to maintain the temperature selected. The BCM performs the following functions to maintain the desired air temperature:

- Monitors the following:
  - Ambient (outside) air temperature sensor
  - Passenger compartment temperature sensor
  - Calculated front duct air temperatures
  - Windshield temperature and inside moisture sensor
  - Evaporator temperature sensor
  - Ambient light/sunload sensor
- Regulate the blower motor speed
- Position the air temperature actuators
- Position the mode door actuators
- Position the recirculation actuator
- Control of the A/C compressor solenoid

When the temperature setting is set to full hot, the blower speed will increase gradually as the coolant warms to normal operating temperature. When normal engine operating temperature is reached the blower stays on high speed and the air temperature actuators stays in the full heat position.

When the temperature setting is set to full cold, the blower will immediately operate at high speed and the air temperature actuators move to full cold position. The mode actuator moves to the panel position and the recirculation actuator moves to the recirculation position.

Under cold ambient temperatures, the automatic HVAC system provides heat in the most efficient manner. The operator can select an extreme temperature setting but the system will not warm the vehicle any faster. Under warm ambient temperatures, the automatic HVAC system also provides air conditioning in the most efficient manner. Selecting an extreme cool temperature will not cool the vehicle any faster.

In automatic mode the values of the windshield temperature and inside moisture sensor are used as control inputs for the BCM application to calculate the fog risk on the passenger compartment side of the windshield and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The A/C compressor and the defrost mode are activated to prevent or remove fog on the passenger compartment side of the windshield. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield.

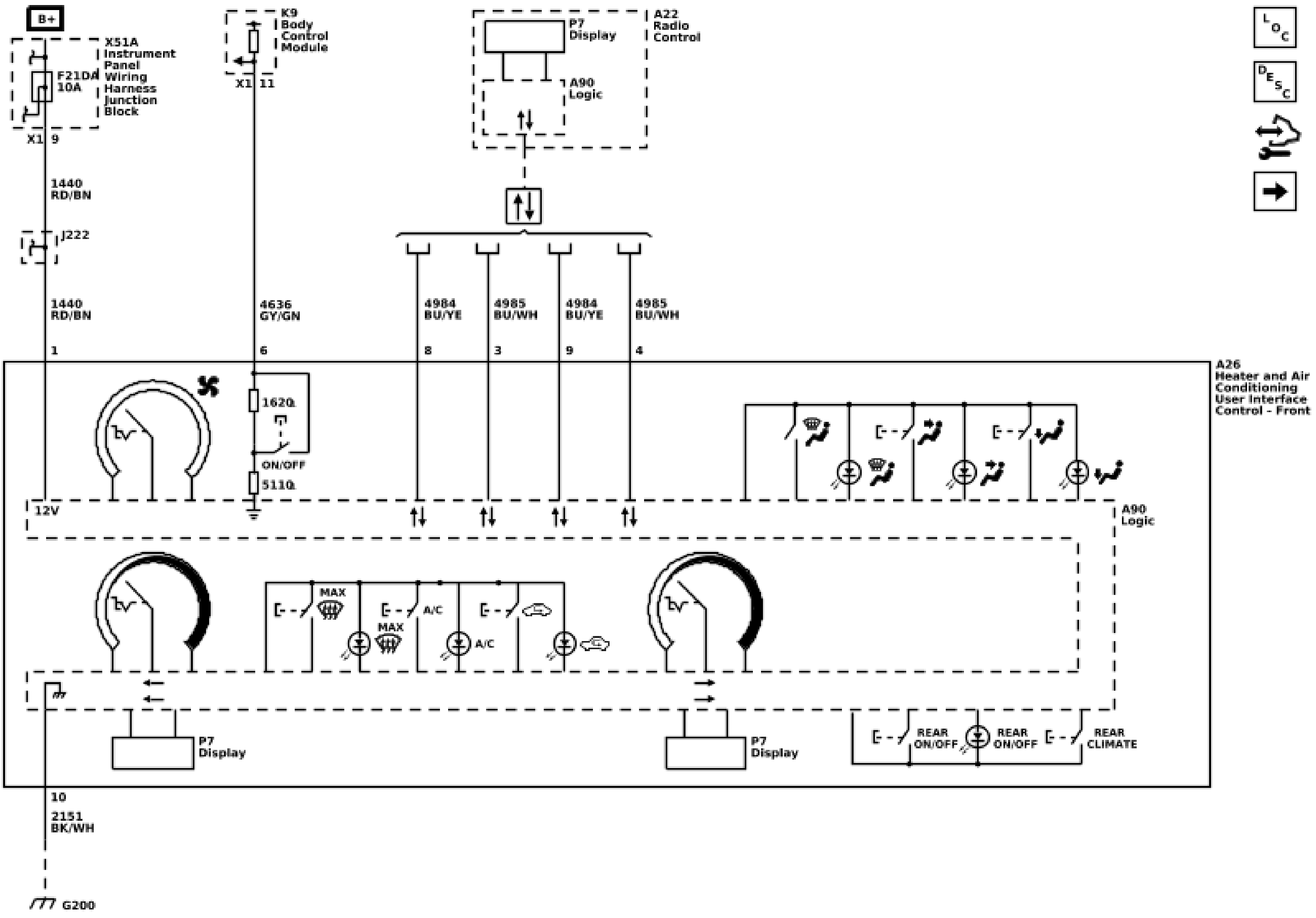
Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

HVAC - Manual

Schematic and Routing Diagrams

HVAC Schematics (Power, Ground, Serial Data and HVAC Controls)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4636 GY/GN
6
A22 Radio Control
P7 Display
A90 Logic
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4985 BU/WH
3
4984 BU/YE
9
4985 BU/WH
4
A26 Heater and Air Conditioning User Interface Control - Front
1620Ω
ON/OFF
5110Ω
12V
A90 Logic
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A/C
MAX
A/C
REAR ON/OFF
REAR ON/OFF
REAR CLIMATE
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2151 BK/WH
G200

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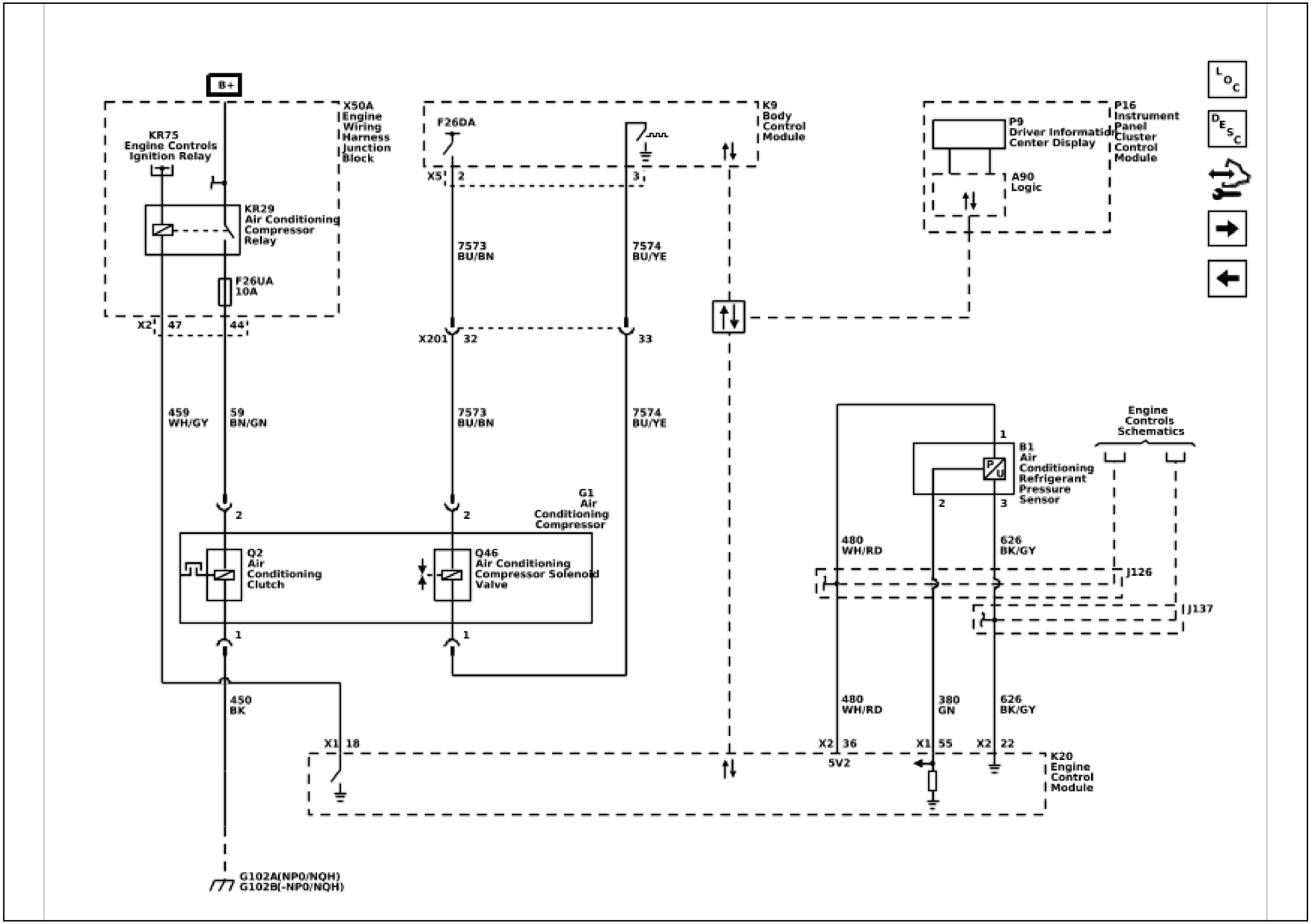
HVAC Schematics (A/C Compressor Controls)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Block
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Air Conditioning
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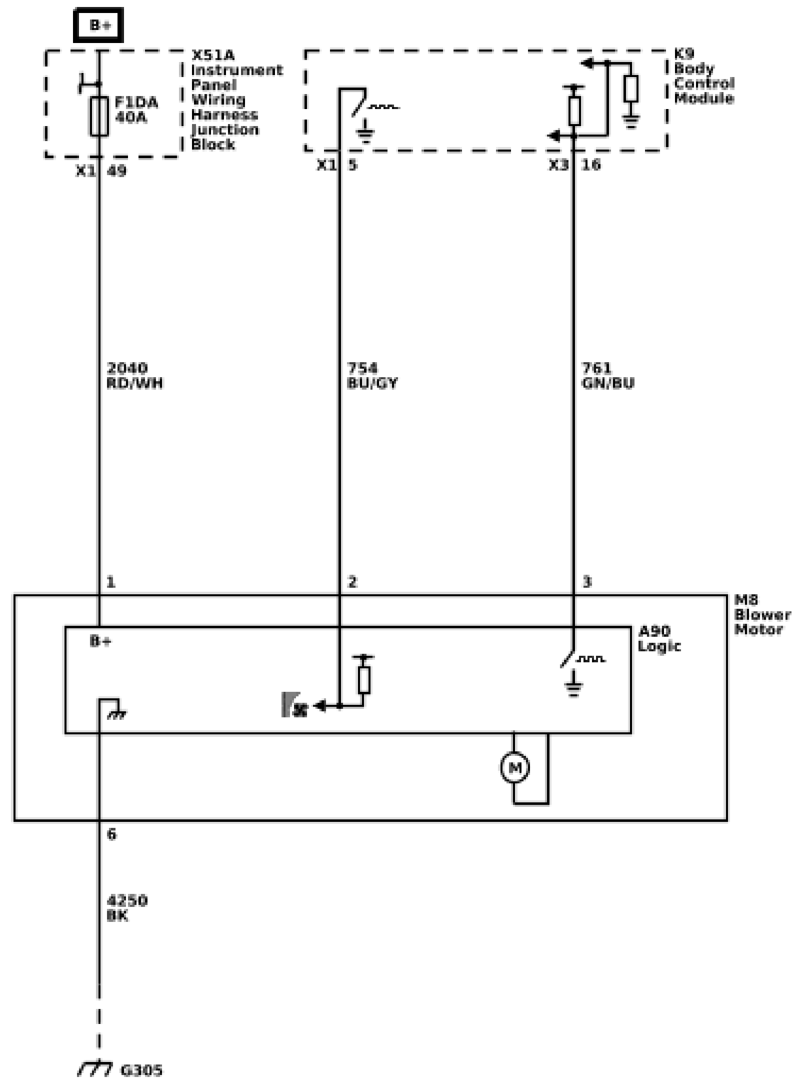
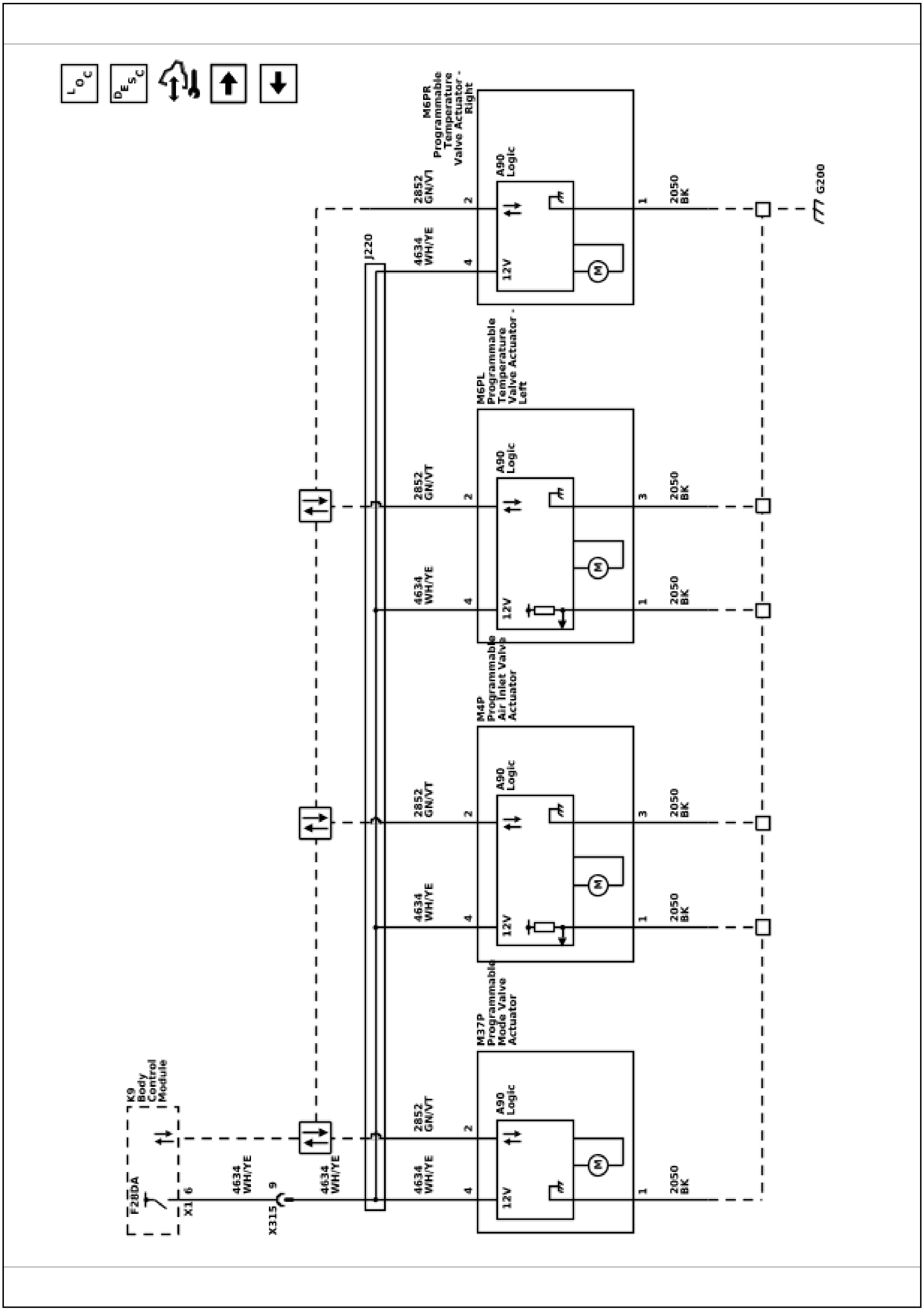
F26UA
10A
X2
47
44
459
WH/GY
59
BN/GN
F26DA
X5
2
3
K9
Body
Control
Module
7573
BU/BN
7574
BU/YE
X201
32
33
P9
Driver Information
Center Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
G1
Air
Conditioning
Compressor
Q2
Air
Conditioning
Clutch
Q46
Air Conditioning
Compressor Solenoid
Valve
2
1
450
BK
G102A(NP0/NQH)
G102B(-NP0/NQH)
B1
Air
Conditioning
Refrigerant
Pressure
Sensor
Engine
Controls
Schematics
480
WH/RD
380
GN
626
BK/GY
J126
J137
X1
18
X2
36
5V2
X1
55
X2
22
K20
Engine
Control
Module
L O C
D E S C
6853053

HVAC Schematics (Blower Motor)

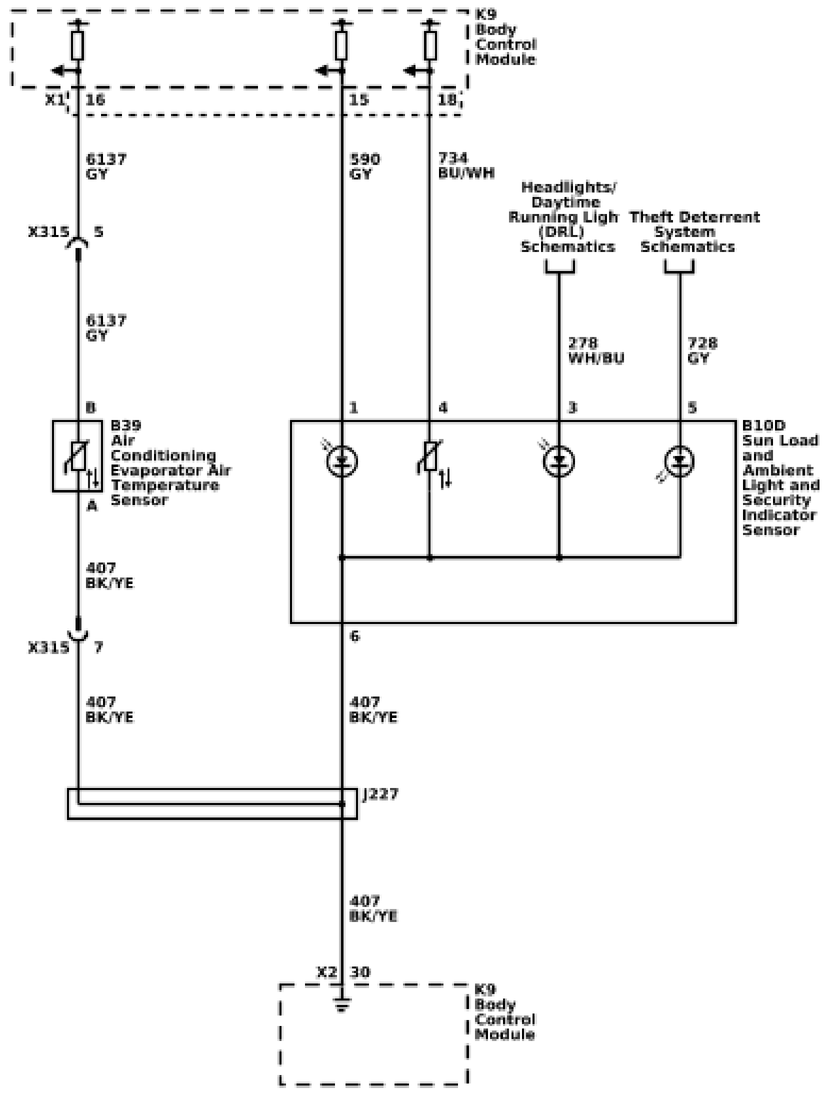

B+
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
F1DA
40A
X1 49
K9
Body
Control
Module
X1 5
X3 16
2040
RD/WH
754
BU/GY
761
GN/BU
1
2
3
M8
Blower
Motor
A90
Logic
B+
M
6
4250
BK
G305

6853054

HVAC Schematics (Mode and Temperature Control Actuators)


6853055
K9 Body Control Module
F28DA
X1 6
4634 WH/YE
X315 9
4634 WH/YE
J220
M37P Programmable Mode Valve Actuator
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator - Left
M6PR Programmable Temperature Valve Actuator - Right
A90 Logic
12V
M
4634 WH/YE
2852 GN/VT
2050 BK
1
2
3
4
G200

HVAC Schematics (Windshield Sensors and A/C Evaporator Temperature Sensor)


K9
Body
Control
Module
X1
16
15
18
6137
GY
590
GY
734
BU/WH
Headlights/
Daytime
Running Ligh
(DRL)
Schematics
Theft Deterrent
System
Schematics
X315
5
6137
GY
278
WH/BU
728
GY
B
1
4
3
5
B39
Air
Conditioning
Evaporator Air
Temperature
Sensor
A
B10D
Sun Load
and
Ambient
Light and
Security
Indicator
Sensor
407
BK/YE
6
X315
7
407
BK/YE
407
BK/YE
J227
407
BK/YE
X2
30
K9
Body
Control
Module

6853056

Description and Operation

Manual HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Heating and A/C Operation
- Recirculation Operation
- Engine Coolant and A/C System Refrigerant

HVAC Control Components

K9 Body Control Module

The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

A26 Heater and Air Conditioning User Interface Control - Front

The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

Actuators

Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

Air Speed and M8 Blower Motor

The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

Afterblow

Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328147-) not found] .

B39 Air Conditioning Evaporator Air Temperature Sensor

The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

B1 Air Conditioning Refrigerant Pressure Sensor

The A/C refrigerant pressure sensor is a 3-wire piezo-electric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

G1 Air Conditioning Compressor

The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

Recirculation Operation

The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM
- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure

- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

Section 7

Power and Signal Distribution

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    Body Control System Schematics 7-19
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    Data Link Communications Description and Operation 7-22
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    Front of Vehicle/Engine Compartment Component Views 7-473
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  Schematic and Routing Diagrams 7-529
    Cigar Lighter/Power Outlet Schematics 7-530
  Description and Operation 7-537
    Mobile Device Wireless Charger Description and Operation 7-537
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    Electrical Schematic Symbols 7-566
    Schematics RPO Code List 7-582
    Master Electrical Schematic Icons 7-584
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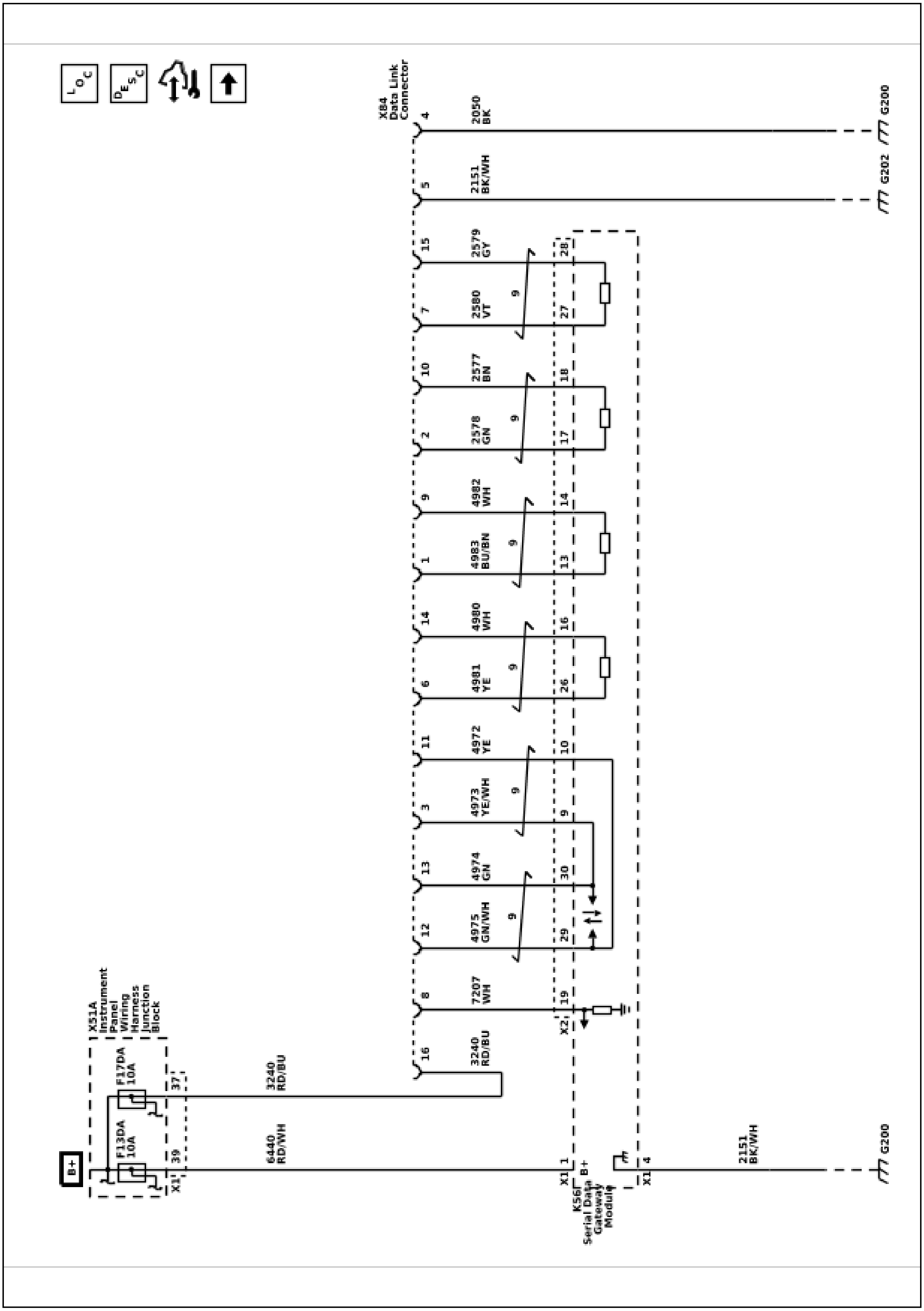
  Component Locator 7-641
    Master Electrical Component List 7-641
  Description and Operation 7-683
    Power Mode Description and Operation 7-683
    Retained Accessory Power Description and Operation 7-687

Power and Signal Distribution

Data Communications

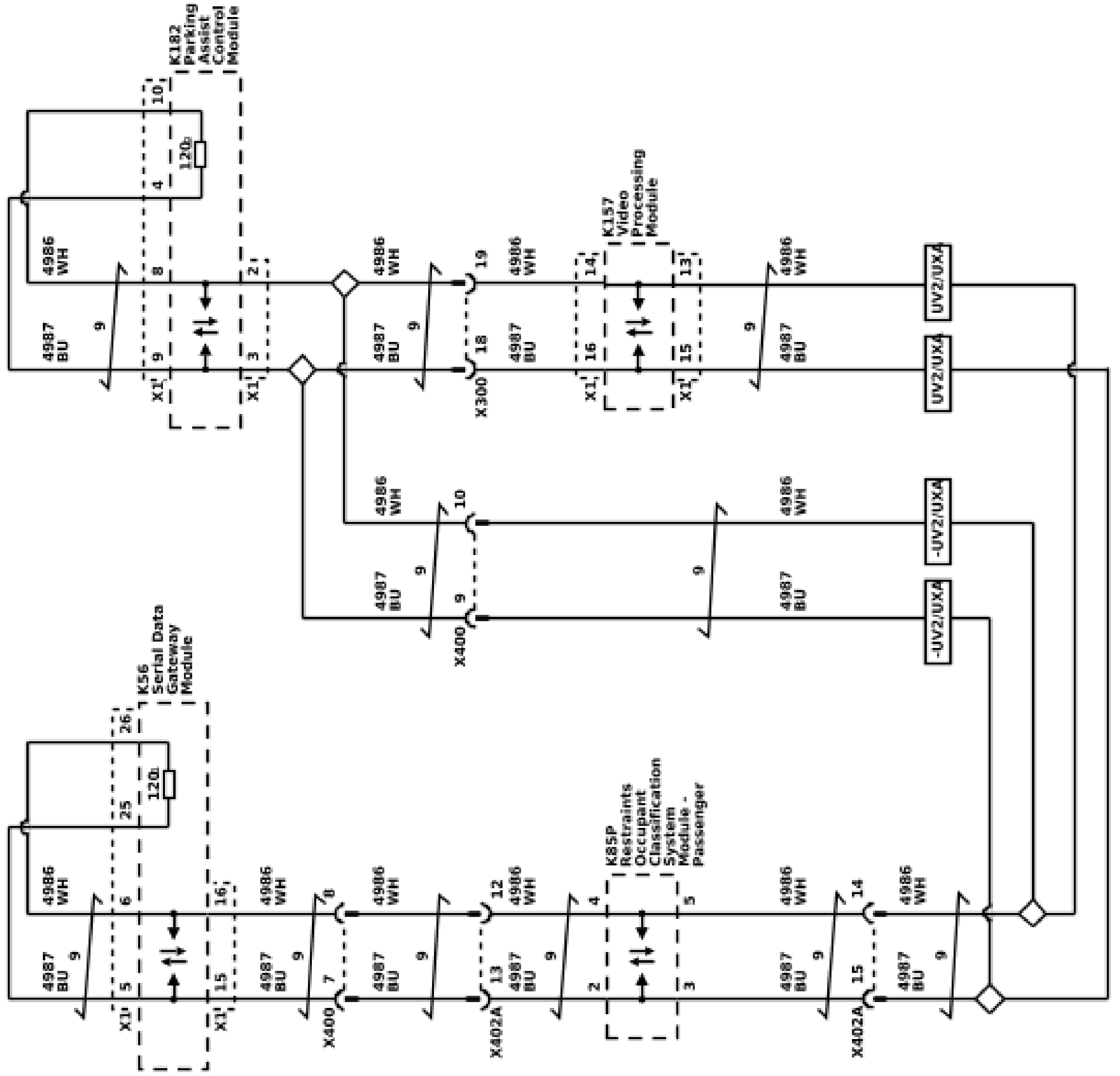
Schematic and Routing Diagrams

Data Communication Schematics (Data Link Connector and Serial Data Gateway Module Power and Ground)

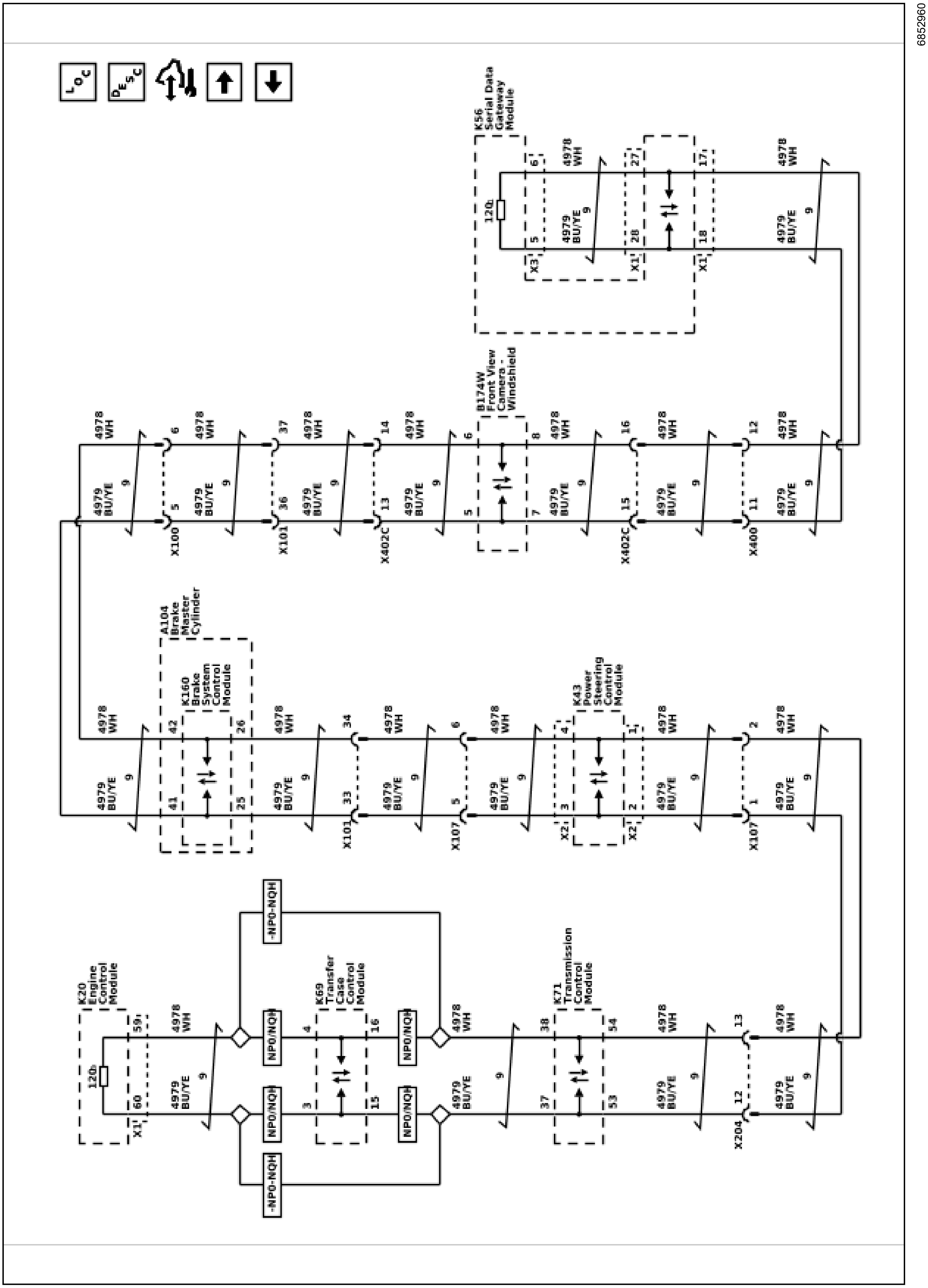

6852958
X84 Data Link Connector
4
2050 BK
G200
5
2151 BK/WH
G202
15
2579 GY
7
2580 VT
10
2577 BN
2
2578 GN
9
4982 WH
1
4983 BU/BN
14
4980 WH
6
4981 YE
11
4972 YE
3
4973 YE/WH
13
4974 GN
12
4975 GN/WH
8
7207 WH
16
3240 RD/BU
9
28
27
18
17
14
13
16
26
10
9
30
29
19
X2
X1 1
B+
X1 4
2151 BK/WH
G200
K56 Serial Data Gateway Module
X51A Instrument Panel Wiring Harness Junction Block
F17DA 10A
F13DA 10A
B+
37
39
X1
3240 RD/BU
6440 RD/WH

Data Communication Schematics (CAN 1)

6852959

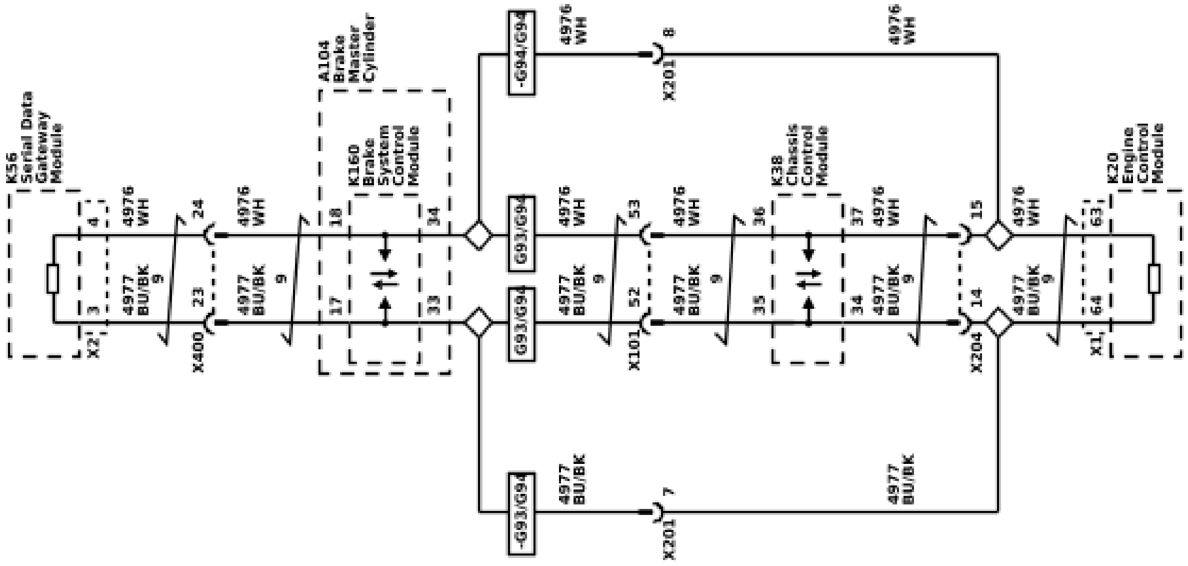

K182 Parking Assist Control Module
K157 Video Processing Module
K56 Serial Data Gateway Module
K85P Restraints Occupant Classification System Module - Passenger
120Ω
4986 WH
4987 BU
9
X1
X300
X400
X402A
UV2/UXA
-UV2/UXA
10
4
8
9
2
3
19
18
14
16
13
15
26
25
6
5
16
15
8
7
12
13
4
2
5
3
14
15

Data Communication Schematics (CAN 2)

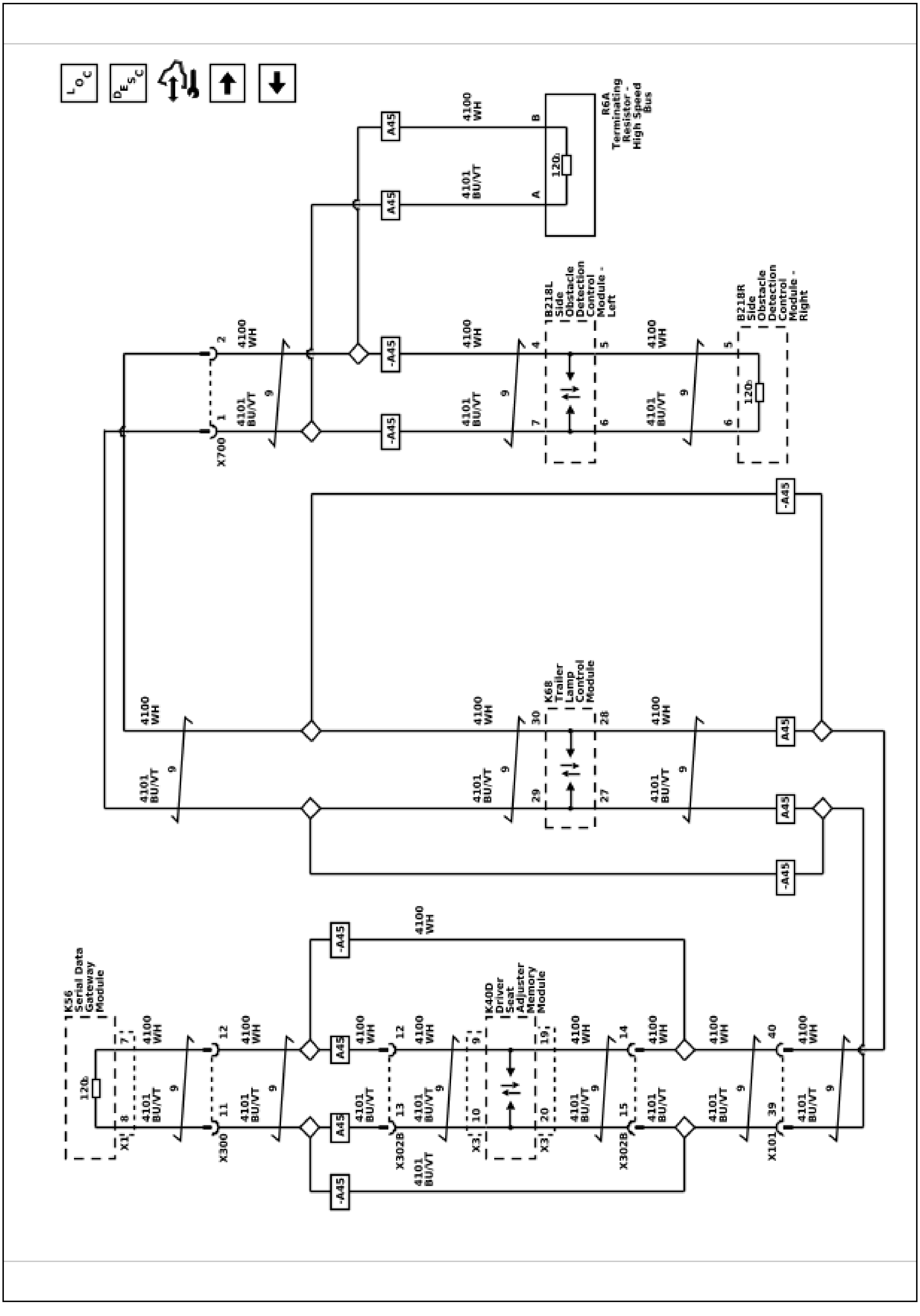

6852960
K56 Serial Data Gateway Module
120Ω
X3 5
6
X1 28
27
X1 18
17
4979 BU/YE
4978 WH
9
B174W Front View Camera - Windshield
5
6
7
8
X100 5
6
X101 36
37
X402C 13
14
X402C 15
16
X400 11
12
A104 Brake Master Cylinder
K160 Brake System Control Module
41
42
25
26
X101 33
34
X107 5
6
K43 Power Steering Control Module
X2 3
4
X2 2
1
X107 1
2
K20 Engine Control Module
120Ω
X1 60
59
K69 Transfer Case Control Module
3
4
15
16
NP0/NQH
-NP0-NQH
K71 Transmission Control Module
37
38
53
54
X204 12
13

Data Communication Schematics (CAN 3)

6852961

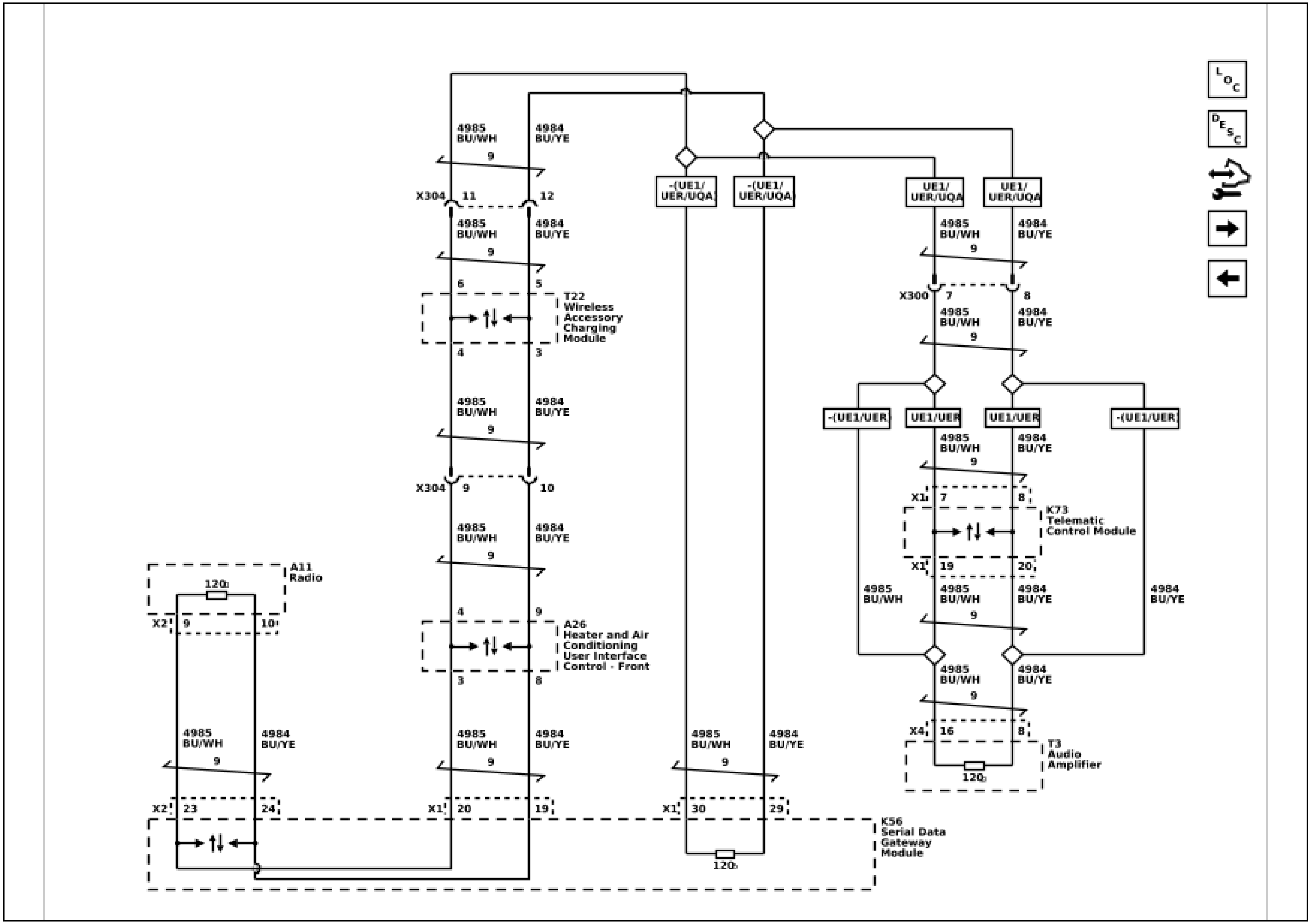

K56
Serial Data Gateway Module
X2
4
3
4976 WH
4977 BU/BK 9
24
23
X400
4976 WH
4977 BU/BK 9
A104
Brake Master Cylinder
K160
Brake System Control Module
18
17
34
33
G93/G94
-G94/G94
-G93/G94
4976 WH
4977 BU/BK
X201
8
7
53
52
X101
4976 WH
4977 BU/BK 9
K38
Chassis Control Module
36
35
37
34
15
14
X204
4976 WH
4977 BU/BK 9
K20
Engine Control Module
63
64
X1

Data Communication Schematics (CAN 4)

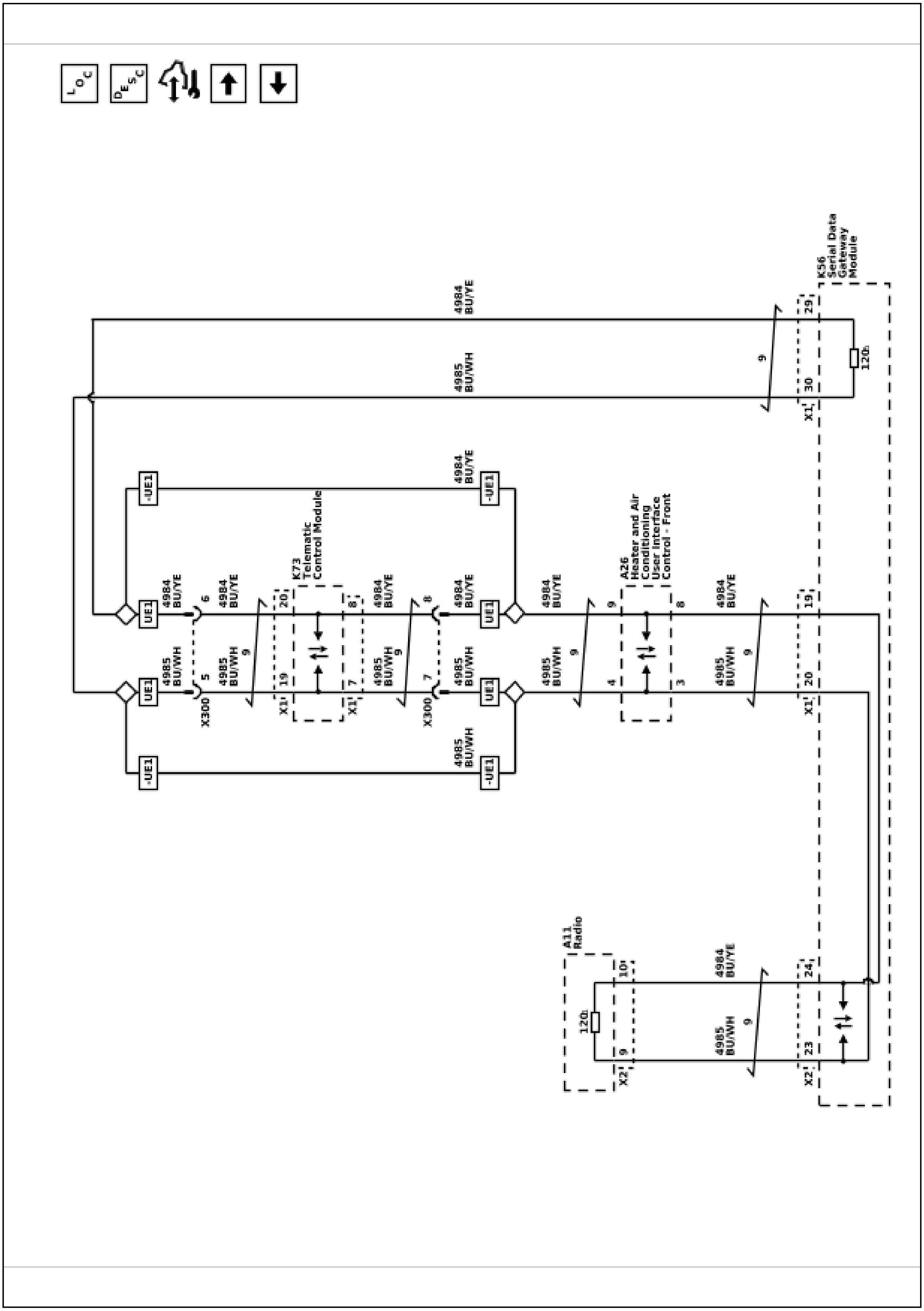


6852962
K56 Serial Data Gateway Module
120Ω
X1 7 8
4100 WH
4101 BU/VT
9
X300 12 11
A45
-A45
X302B 12 13
K40D Driver Seat Adjuster Memory Module
X3 9 10
X3 19 20
X302B 14 15
X101 40 39
K68 Trailer Lamp Control Module
30 29 28 27
X700 2 1
B218L Side Obstacle Detection Control Module - Left
4 7 5 6
B218R Side Obstacle Detection Control Module - Right
5 6
R6A Terminating Resistor - High Speed Bus
A B

Data Communication Schematics (CAN 5 (K4C / UQA))

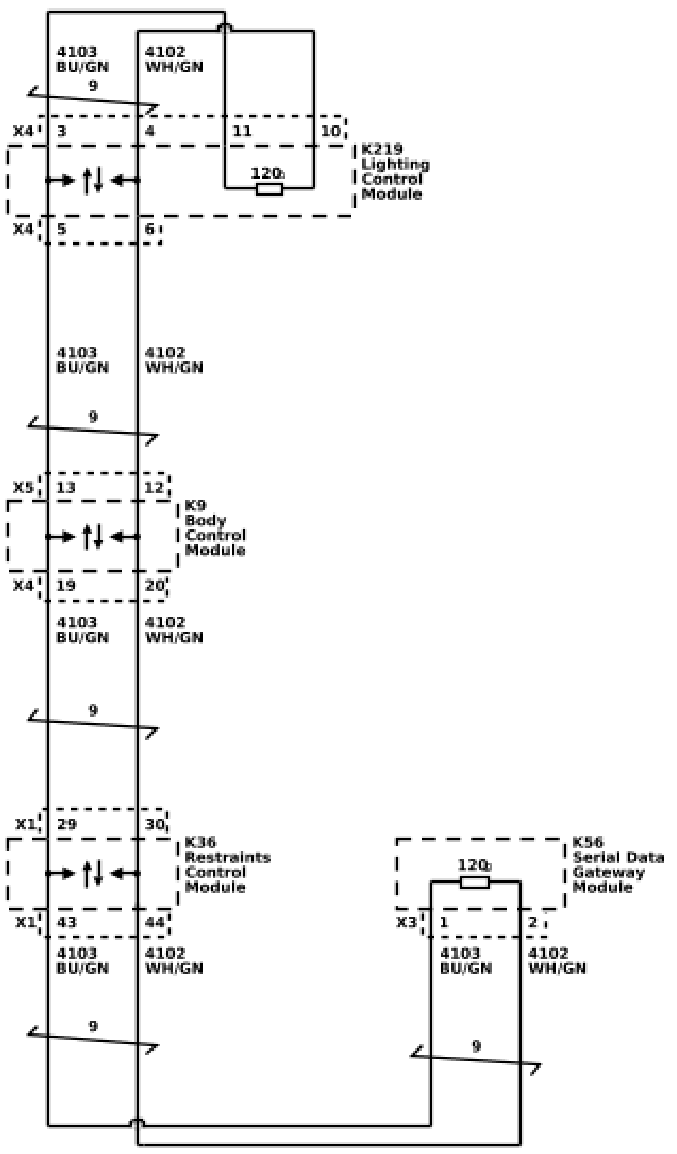

4985 BU/WH
4984 BU/YE
9
X304
11
12
6
5
T22 Wireless Accessory Charging Module
4
3
X304
9
10
A11 Radio
120Ω
X2
9
10
4
9
A26 Heater and Air Conditioning User Interface Control - Front
3
8
X2
23
24
X1
20
19
X1
30
29
K56 Serial Data Gateway Module
-(UE1/UER/UQA)
UE1/UER/UQA
X300
7
8
-(UE1/UER)
UE1/UER
X1
K73 Telematic Control Module
19
20
X4
16
T3 Audio Amplifier
6852963

Data Communication Schematics (CAN 5 (- (K4C / UQA)))


LOC
DESC
K56 Serial Data Gateway Module
4984 BU/YE
4985 BU/WH
9
X1 29
30
120Ω
UE1
-UE1
X300 5
6
K73 Telematic Control Module
X1 20
19
8
7
X300 8
7
A26 Heater and Air Conditioning User Interface Control - Front
9
4
3
X1 19
20
A11 Radio
X2 10
9
X2 24
23

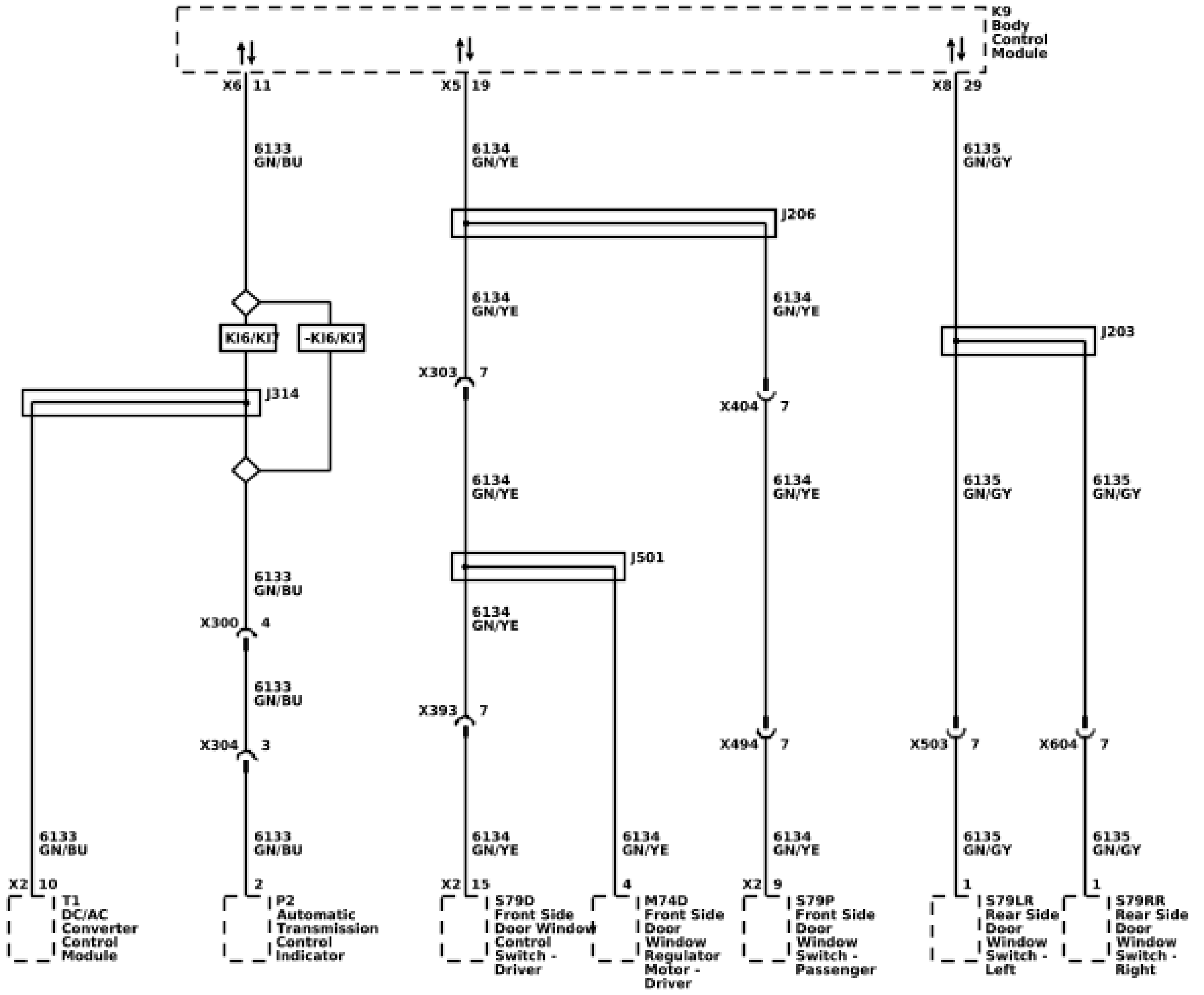
6852964

Data Communication Schematics (CAN 9)


4103
BU/GN
4102
WH/GN
9
X4
3
4
11
10
120Ω
K219
Lighting
Control
Module
5
6
X5
13
12
K9
Body
Control
Module
19
20
X1
29
30
K36
Restraints
Control
Module
43
44
X3
1
2
K56
Serial Data
Gateway
Module

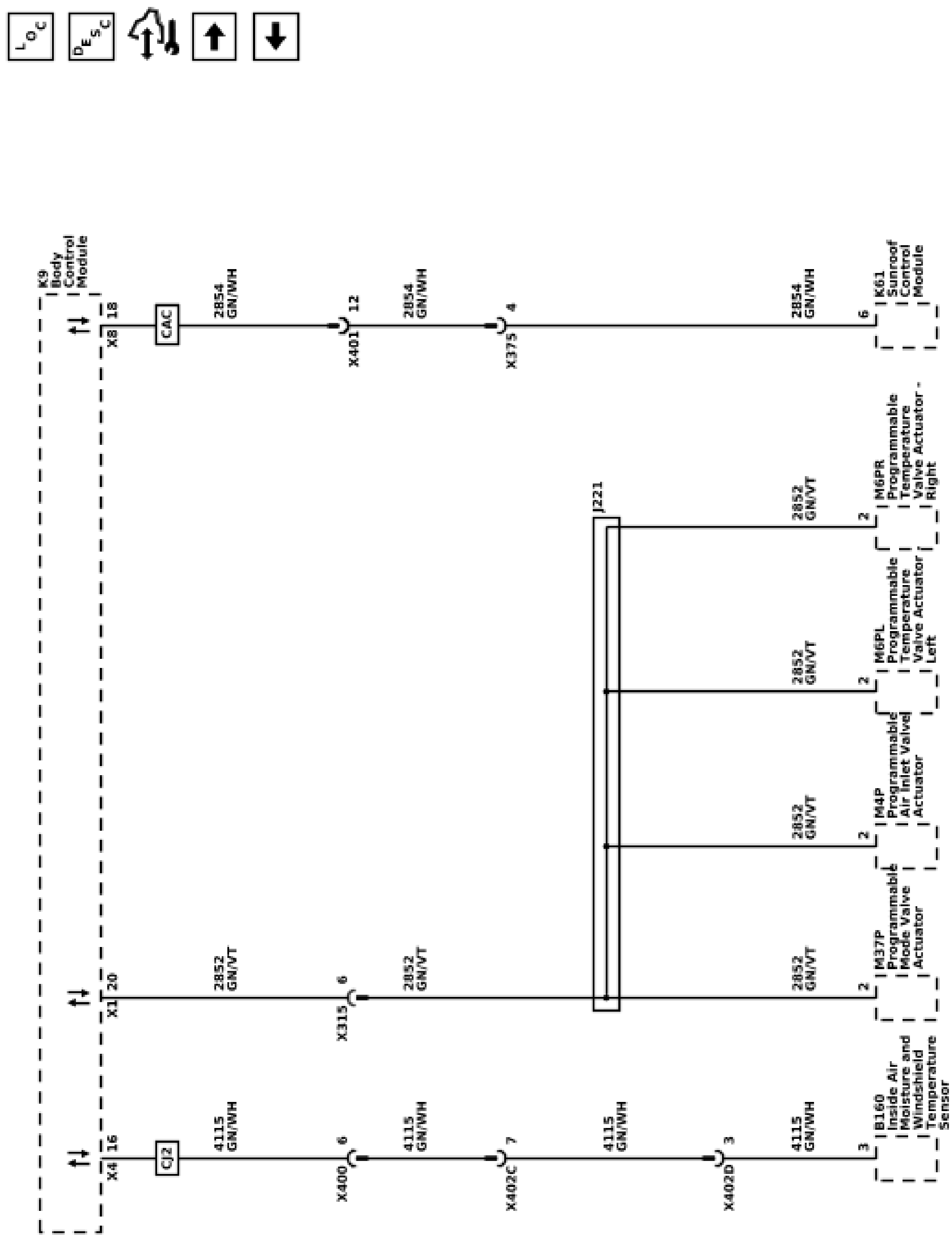
6852965

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 2, 3, and 4)

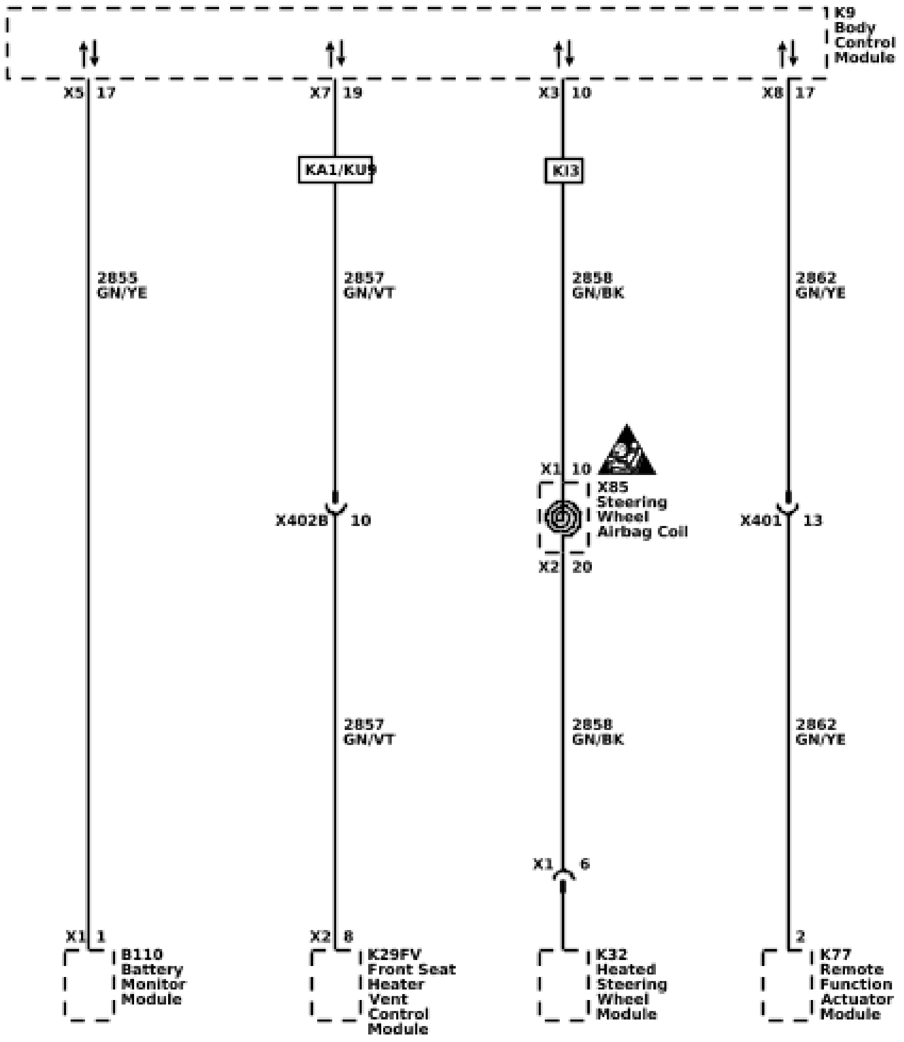

K9 Body Control Module
X6 11
6133 GN/BU
X5 19
6134 GN/YE
X8 29
6135 GN/GY
J206
6134 GN/YE
6134 GN/YE
KI6/KI7
-KI6/KI7
J203
X303 7
J314
X404 7
6134 GN/YE
6134 GN/YE
6135 GN/GY
6135 GN/GY
J501
6133 GN/BU
6134 GN/YE
X300 4
6133 GN/BU
X393 7
X304 3
X494 7
X503 7
X604 7
6133 GN/BU
6133 GN/BU
6134 GN/YE
6134 GN/YE
6134 GN/YE
6135 GN/GY
6135 GN/GY
X2 10
2
X2 15
4
X2 9
1
1
T1 DC/AC Converter Control Module
P2 Automatic Transmission Control Indicator
S79D Front Side Door Window Control Switch - Driver
M74D Front Side Door Window Regulator Motor - Driver
S79P Front Side Door Window Switch - Passenger
S79LR Rear Side Door Window Switch - Left
S79RR Rear Side Door Window Switch - Right

6852966

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 5, 6, and 8)

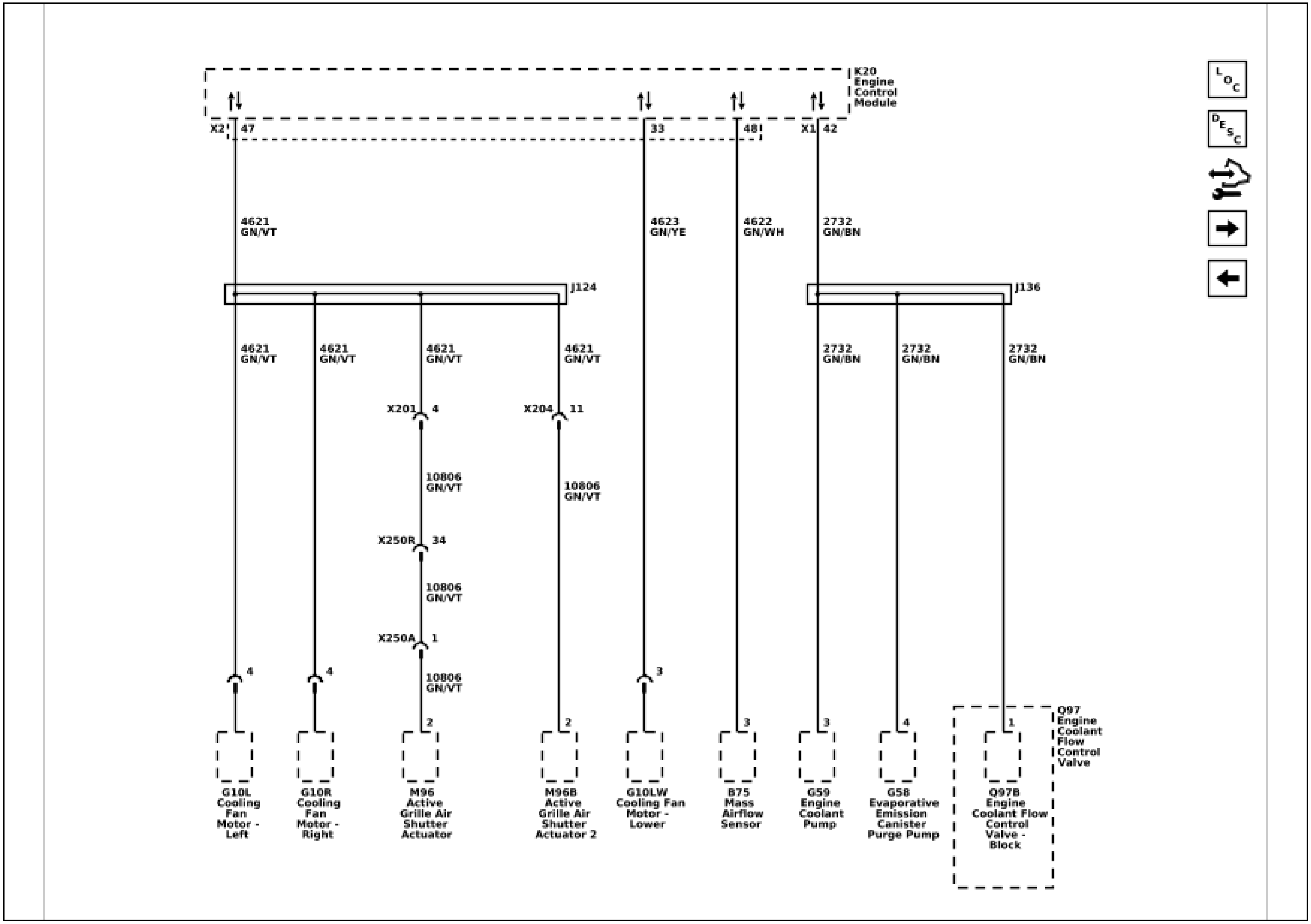

K9 Body Control Module
X8 18
CAC
2854 GN/WH
X401 12
X375 4
6
K61 Sunroof Control Module
X1 20
2852 GN/VT
X315 6
J221
2
M37P Programmable Mode Valve Actuator
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator - Left
M6PR Programmable Temperature Valve Actuator - Right
X4 16
CJ2
4115 GN/WH
X400 6
X402C 7
X402D 3
3
B160 Inside Air Moisture and Windshield Temperature Sensor
6852967

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 9, 11, 12, and 16)


K9
Body
Control
Module
X5 17
X7 19
X3 10
X8 17
KA1/KU9
KI3
2855
GN/YE
2857
GN/VT
2858
GN/BK
2862
GN/YE
X1 10
X85
Steering
Wheel
Airbag Coil
X2 20
X402B 10
X401 13
2857
GN/VT
2858
GN/BK
2862
GN/YE
X1 6
X1 1
B110
Battery
Monitor
Module
X2 8
K29FV
Front Seat
Heater
Vent
Control
Module
K32
Heated
Steering
Wheel
Module
2
K77
Remote
Function
Actuator
Module

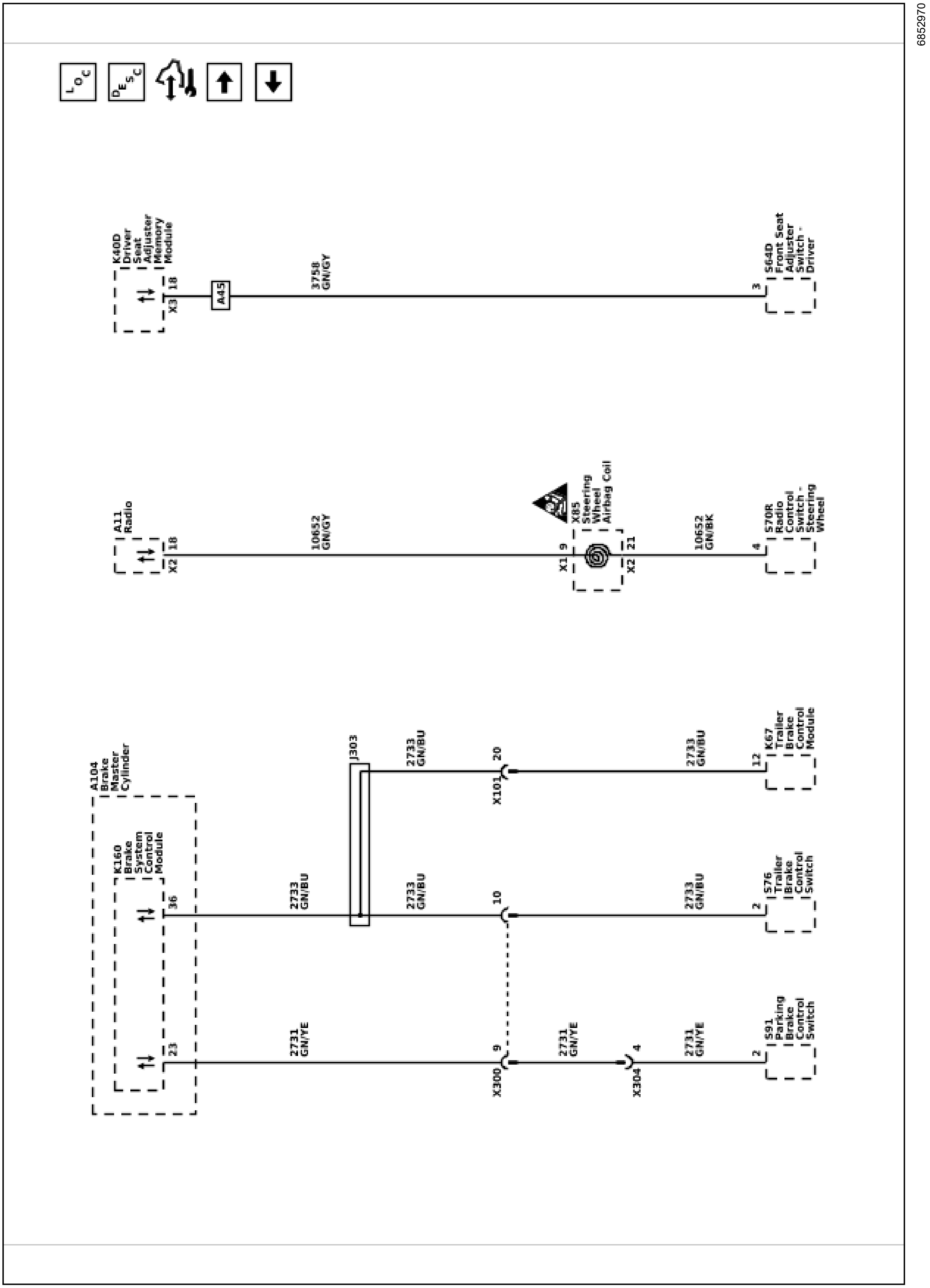
6852968

Data Communication Schematics (Engine Control Module Local Interconnect Network LIN Busses)

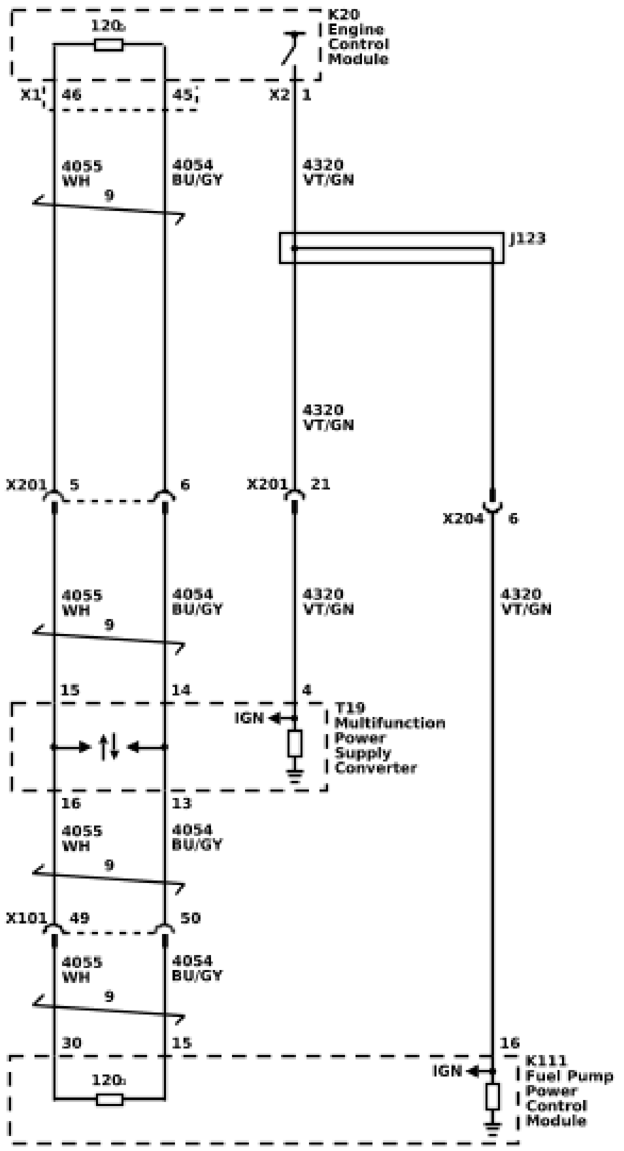

K20
Engine
Control
Module
X2 47
33
48
X1 42
4621
GN/VT
4623
GN/YE
4622
GN/WH
2732
GN/BN
J124
J136
4621
GN/VT
4621
GN/VT
4621
GN/VT
4621
GN/VT
2732
GN/BN
2732
GN/BN
2732
GN/BN
X201 4
X204 11
10806
GN/VT
10806
GN/VT
X250R 34
10806
GN/VT
X250A 1
10806
GN/VT
4
4
3
2
2
3
3
4
1
Q97
Engine
Coolant
Flow
Control
Valve
G10L
Cooling
Fan
Motor -
Left
G10R
Cooling
Fan
Motor -
Right
M96
Active
Grille Air
Shutter
Actuator
M96B
Active
Grille Air
Shutter
Actuator 2
G10LW
Cooling Fan
Motor -
Lower
B75
Mass
Airflow
Sensor
G59
Engine
Coolant
Pump
G58
Evaporative
Emission
Canister
Purge Pump
Q97B
Engine
Coolant Flow
Control
Valve -
Block
LOC
DESC

6852969

Data Communication Schematics (General Local Interconnect Network - LIN Busses)

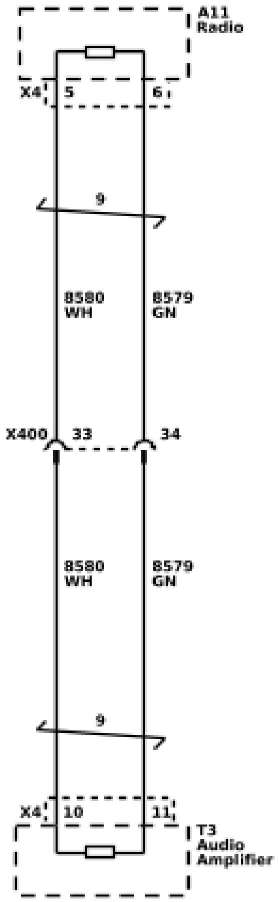

6852970
LOC
DESC
K40D Driver Seat Adjuster Memory Module
X3 18
A45
3758 GN/GY
3
S64D Front Seat Adjuster Switch - Driver
A11 Radio
X2 18
10652 GN/GY
X1 9
X85 Steering Wheel Airbag Coil
X2 21
10652 GN/BK
4
S70R Radio Control Switch - Steering Wheel
A104 Brake Master Cylinder
K160 Brake System Control Module
36
23
2733 GN/BU
J303
2733 GN/BU
20
X101
2733 GN/BU
12
K67 Trailer Brake Control Module
2733 GN/BU
10
2733 GN/BU
2
S76 Trailer Brake Control Switch
2731 GN/YE
9
X300
2731 GN/YE
4
X304
2731 GN/YE
2
S91 Parking Brake Control Switch

Data Communication Schematics (Powertrain and Enable CAN)


K20
Engine
Control
Module
120Ω
X1 46
45
X2 1
4055
WH
4054
BU/GY
9
4320
VT/GN
J123
X201 5
6
X201 21
X204 6
15
14
4
IGN
T19
Multifunction
Power
Supply
Converter
16
13
X101 49
50
30
15
16
K111
Fuel Pump
Power
Control
Module

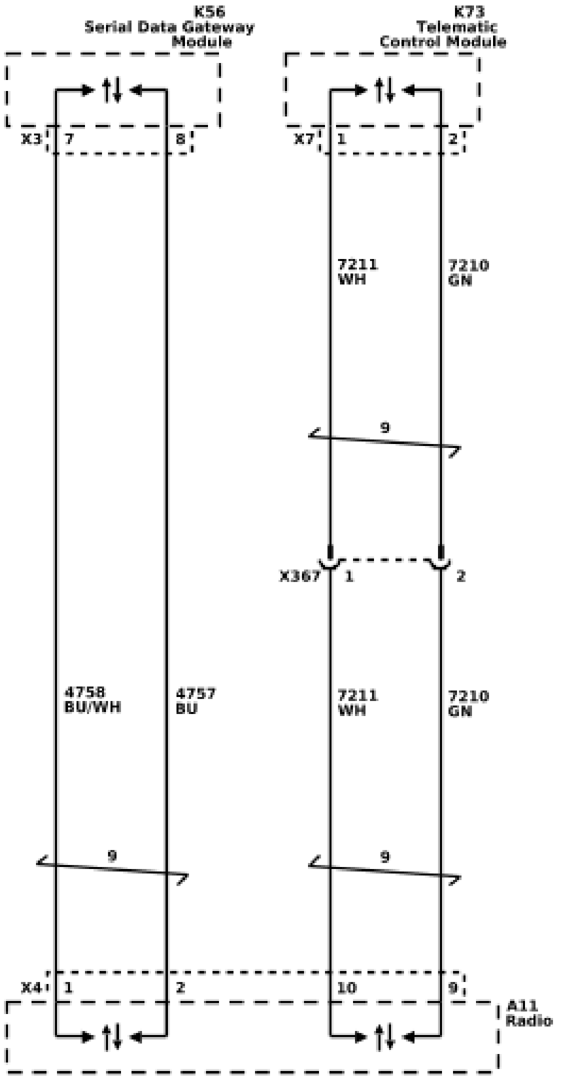
6852971

Data Communication Schematics (Automotive Audio Bus A2B Serial Data 1 (UQA))


A11
Radio
X4
5
6
9
8580
WH
8579
GN
X400
33
34
8580
WH
8579
GN
9
X4
10
11
T3
Audio
Amplifier

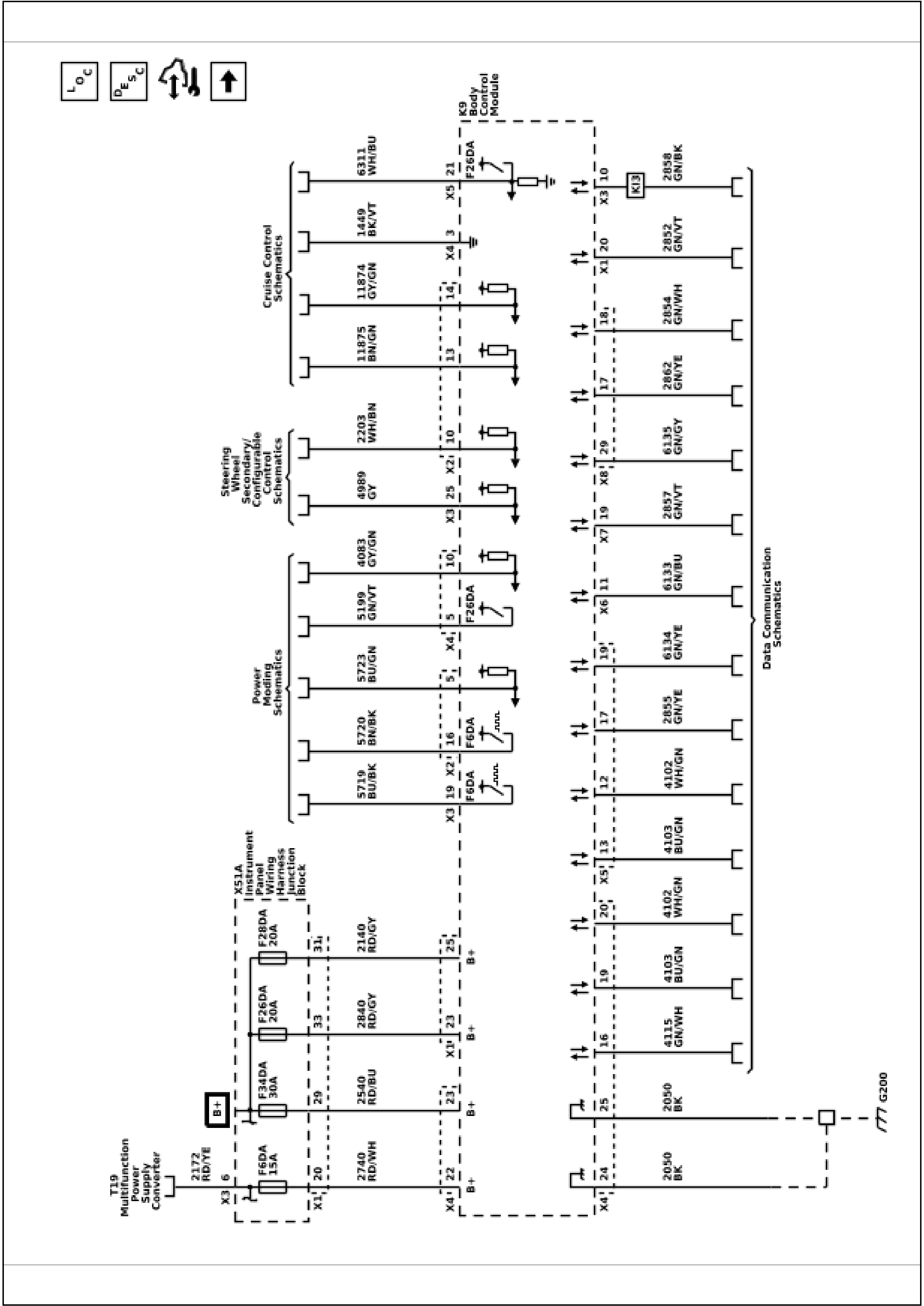
6852972

Data Communication Schematics (Ethernet Bus)

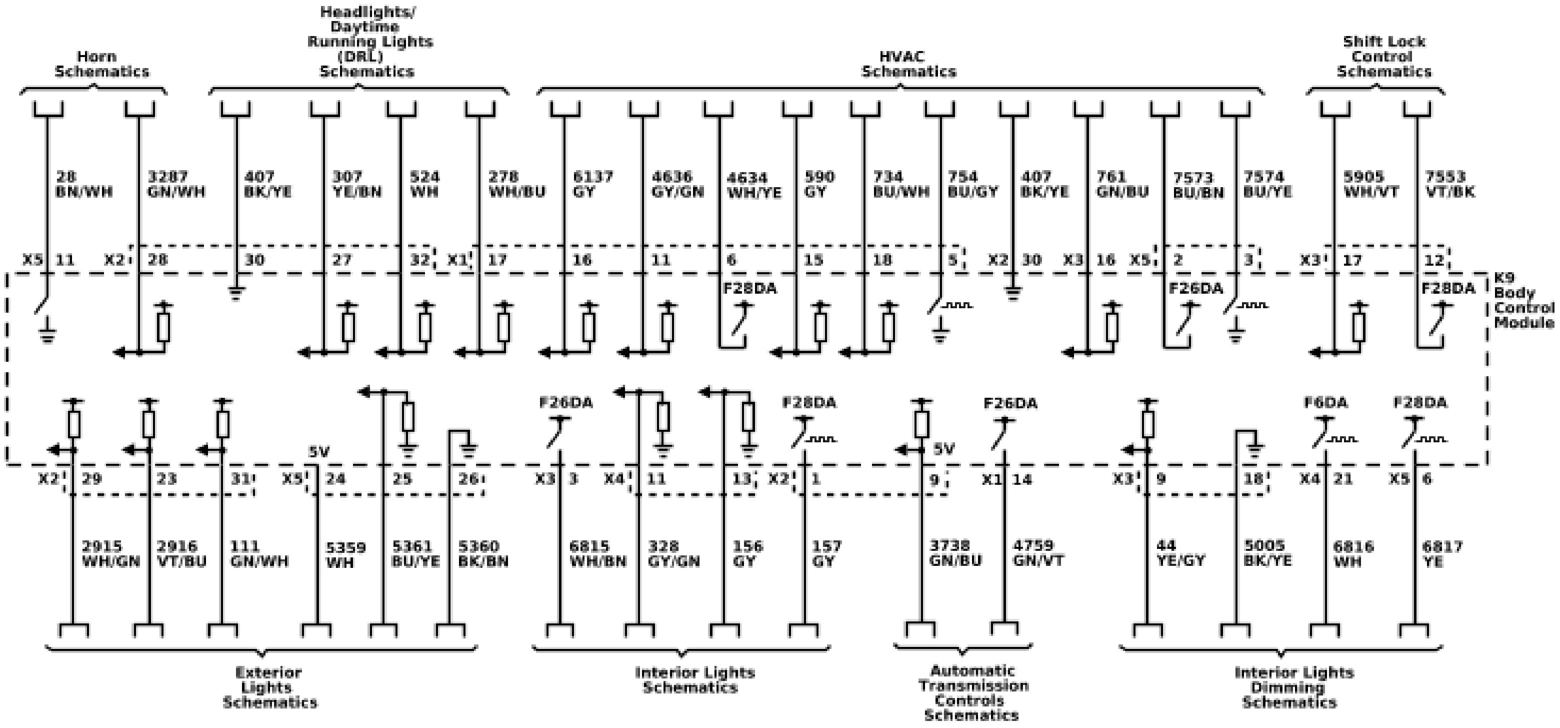

K56
Serial Data Gateway
Module
K73
Telematic
Control Module
X3
7
8
X7
1
2
7211
WH
7210
GN
9
X367
1
2
4758
BU/WH
4757
BU
7211
WH
7210
GN
9
9
X4
1
2
10
9
A11
Radio

6852973

Body Control System Schematics (Power, Ground, Serial Data, and Subsystem References 1 of 3)

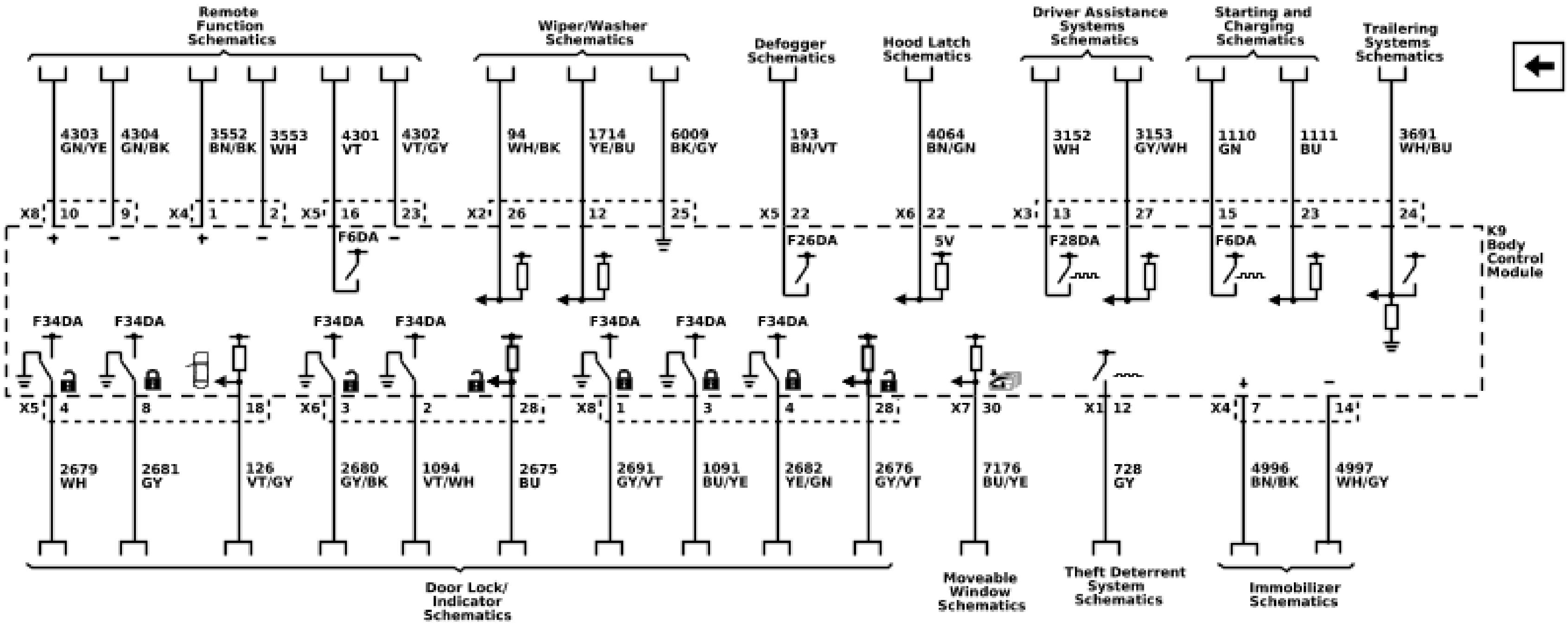

6852947
T19 Multifunction Power Supply Converter
X3 6
2172 RD/YE
B+
X51A Instrument Panel Wiring Harness Junction Block
F6DA 15A
F34DA 30A
F26DA 20A
F28DA 20A
X1 20
29
33
31
2740 RD/WH
2540 RD/BU
2840 RD/GY
2140 RD/GY
X4 22
23
X1 23
25
B+
B+
B+
B+
K9 Body Control Module
Power Moding Schematics
5719 BU/BK
5720 BN/BK
5723 BU/GN
5199 GN/VT
4083 GY/GN
X3 19
X2 16
5
X4 5
10
F6DA
F6DA
F26DA
Steering Wheel Secondary/ Configurable Control Schematics
4989 GY
2203 WH/BN
X3 25
X2 10
Cruise Control Schematics
11875 BN/GN
11874 GY/GN
1449 BK/VT
6311 WH/BU
13
14
X4 3
X5 21
F26DA
X4 24
25
2050 BK
2050 BK
G200
16
19
20
X5 13
12
17
19
X6 11
X7 19
X8 29
17
18
X1 20
X3 10
4115 GN/WH
4103 BU/GN
4102 WH/GN
4103 BU/GN
4102 WH/GN
2855 GN/YE
6134 GN/YE
6133 GN/BU
2857 GN/VT
6135 GN/GY
2862 GN/YE
2854 GN/WH
2852 GN/VT
2858 GN/BK
K|3
Data Communication Schematics

Body Control System Schematics (Subsystem References 2 of 3)


Horn Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
HVAC Schematics
Shift Lock Control Schematics
28 BN/WH
3287 GN/WH
407 BK/YE
307 YE/BN
524 WH
278 WH/BU
6137 GY
4636 GY/GN
4634 WH/YE
590 GY
734 BU/WH
754 BU/GY
407 BK/YE
761 GN/BU
7573 BU/BN
7574 BU/YE
5905 WH/VT
7553 VT/BK
X5 11
X2 28
30
27
32
X1 17
16
11
6
15
18
5
X2 30
X3 16
X5 2
3
X3 17
12
F28DA
F26DA
F28DA
K9 Body Control Module
F26DA
F28DA
F26DA
F6DA
F28DA
5V
5V
X2 29
23
31
X5 24
25
26
X3 3
X4 11
13
X2 1
9
X1 14
X3 9
18
X4 21
X5 6
2915 WH/GN
2916 VT/BU
111 GN/WH
5359 WH
5361 BU/YE
5360 BK/BN
6815 WH/BN
328 GY/GN
156 GY
157 GY
3738 GN/BU
4759 GN/VT
44 YE/GY
5005 BK/YE
6816 WH
6817 YE
Exterior Lights Schematics
Interior Lights Schematics
Automatic Transmission Controls Schematics
Interior Lights Dimming Schematics

6852948

Body Control System Schematics (Subsystem References 3 of 3)


Remote Function Schematics
4303 GN/YE
4304 GN/BK
3552 BN/BK
3553 WH
4301 VT
4302 VT/GY
X8 10
9
X4 1
2
X5 16
23
F6DA
Wiper/Washer Schematics
94 WH/BK
1714 YE/BU
6009 BK/GY
X2 26
12
25
Defogger Schematics
193 BN/VT
X5 22
F26DA
Hood Latch Schematics
4064 BN/GN
X6 22
5V
Driver Assistance Systems Schematics
3152 WH
3153 GY/WH
X3 13
27
F28DA
Starting and Charging Schematics
1110 GN
1111 BU
15
23
F6DA
Trailering Systems Schematics
3691 WH/BU
24
K9 Body Control Module
F34DA
F34DA
F34DA
F34DA
F34DA
F34DA
F34DA
X5 4
8
18
X6 3
2
28
X8 1
3
4
28
X7 30
X1 12
X4 7
14
2679 WH
2681 GY
126 VT/GY
2680 GY/BK
1094 VT/WH
2675 BU
2691 GY/VT
1091 BU/YE
2682 YE/GN
2676 GY/VT
7176 BU/YE
728 GY
4996 BN/BK
4997 WH/GY
Door Lock/ Indicator Schematics
Moveable Window Schematics
Theft Deterrent System Schematics
Immobilizer Schematics
6852949

Description and Operation

Data Link Communications Description and Operation

Note: This is an overview of different serial data buses used by control modules to communicate with each others. Use *Data Communication Schematics 7-3* to find out which serial data buses are configured for a specific vehicle.

Vehicle Intelligence Platform (VIP) Data Link Communications Overview

There are many components in a vehicle that rely on information from other sources, transmit information to other sources, or both. Serial data communication networks provide a reliable, cost effective, way for various components of the vehicle to “talk” to one another and share information.

General Motors uses a number of different communication buses to ensure the timely and efficient exchange of information between control modules. When compared to each other, some of these buses are different in nature as far as speed, signal characteristics, and behavior.

On the other hand, when other buses are compared to each other they have similar characteristics and simply operate in parallel. In this case they are used to group together components which have high interaction. Examples are the Controller Area Network (CAN), private CAN, and Local Interconnect Network (LIN) buses. This allows them to communicate with each other on a bus with reduced message congestion insuring faster and the more timely exchange of information than if all vehicle control modules were on a single bus.

The majority of information that exists within a given network generally stays local; however some information will have to be shared on other networks. Control modules designated as Gateways perform the function of transferring information between the various buses. A Gateway module is connected to at least 2 buses and will interact with each network according to its message strategy and transmission models.

CAN provides the capability for a receiving control module to monitor message transmissions from other control modules in order to determine if messages of interest are not being received. The primary purpose is to allow reasonable default values to be substituted for the information no longer being received. Additionally, a control module may set a Diagnostic Trouble Code (DTC) to indicate that the control module it is expecting information from is no longer communicating.

K9 Body Control Module (BCM)

The body control system consists of the K9 Body Control Module, communications, and various input and outputs. Some inputs, outputs and messages require other control modules to interact with the K9 Body Control Module. The K9 Body Control Module also has discrete input and output terminals to control the vehicle's body functions. The K9 Body Control Module is wired to CAN bus and multiple LIN buses and acts as a gateway between them.

The various K9 Body Control Module input and output circuits are illustrated in the corresponding functional areas on the K9 Body Control Module electrical schematics. Refer to the *Body Control System Schematics 7-19* for more detailed information.

K56 Serial Data Gateway Module

The K56 Serial Data Gateway Module gates messages between the CAN networks described in the Controller Area Network (CAN) Bus Description section below. The K56 Serial Data Gateway Module needs to know what CAN control modules are present on a given vehicle in order to enable/disable loss of communication DTCs and to know which CAN control modules to track for their communication status. The K56 Serial Data Gateway Module has the ability to learn the diagnostic addresses list of CAN control modules to identify what CAN control modules are equipped on the vehicle and what CAN buses they are on. If the K56 Serial Data Gateway Module is replaced, this learn/verification process will have to be done again through K56 Serial Data Gateway Module programming and setup procedure in SPS. This learn process will not cause any previously learned contents to be forgotten/overwritten. If the learn process is not done on a new K56 Serial Data Gateway Module, DTC U1977 will be set until the learn procedure is executed. If the learn is invalid due to control module internal malfunction or a K56 Serial Data Gateway Module swap, DTC U3000 42 or DTC U3002 56 will be set. If any of these DTCs sets, the K56 Serial Data Gateway Module will enable loss of communication for all CAN control modules. This will result in loss of communication DTCs being set against CAN control modules that are not equipped on the vehicle.

A fault can be localized by monitoring the normal mode messages on a CAN bus. The K56 Serial Data Gateway Module will monitor one signal per CAN control module per CAN bus to determine control module status. When a signal times out, a loss of communication event will be started.

Controller Area Network (CAN) Bus Description

The CAN buses are used where data needs to be exchanged at a high enough rate to minimize the delay between the occurrence of a change in sensor value and the reception of this information by a control device using the information to adjust vehicle system performance.

Each CAN serial data network consists of two twisted wires. One signal circuit is identified as CAN-High and the other signal circuit is identified as CAN-Low. At each end of the data bus there is a 124 Ω termination resistor between the CAN-High and CAN-Low circuits. Most CAN control modules have an internal resistance of 4.950K Ω. There may be one or two CAN control modules that have a higher internal resistance like the K60 Column Lock Module which has an internal resistance of 77.4K Ω. The internal resistance of CAN control modules causes lower terminating resistor reading when splitting the CAN network to check for faults. The more CAN control modules on the network the lower the terminating resistor will read.

The data to be transmitted over a CAN bus is represented by the voltage difference between the CAN-High signal voltage and the CAN-Low signal voltage. Data symbols (1's and 0's) are transmitted sequentially at the following rate:

- CAN 1 (circuits 4986 & 4987) = 500 Kbit/s
- CAN 2 (circuits 4978 & 4979) = 2 Mbit/s
- CAN 3 (circuits 4976 & 4977) = 500 Kbit/s
- CAN 4 (circuits 4100 & 4101) = 500 Kbit/s
- CAN 5 (circuits 4984 & 4985) = 500 Kbit/s
- CAN 6 (circuits 4980 & 4981) = 5 Mbit/s
- CAN 7 (circuits 4982 & 4983) = 5 Mbit/s
- CAN 8 (circuits 4104 & 4105) = 2 Mbit/s
- CAN 9 (circuits 4102 & 4103) = 2 Mbit/s
- CAN 10 (circuits 10800 & 10801) = 2 Mbit/s

Classical CAN: CAN 1, CAN 3, CAN 4, and CAN 5 are Classical CAN buses. In Classical CAN, the entire message is transmitted at the same baud rate. The size of the data field is limited to 8 bytes.

CAN FD: CAN 2, CAN 8, CAN 9, and CAN 10 are CAN FD buses (FD = Flexible Data-Rate). In CAN FD, the data field of the message is transmitted at the same or at a faster baud rate. The size of the data field can be up to 64 bytes in length.

When the two wire bus is at rest the CAN-High and CAN-Low signal circuits are not being driven and this represents a logic “1”. In this state both signal circuits are at the same voltage of 2.5 V. The differential voltage is approximately 0 V.

When a logic “0” is to be transmitted, the CAN-High signal circuit is driven higher to about 3.5 V and the CAN-Low circuit is driven lower to about 1.5 V. The differential voltage becomes approximately 2.0 (+/- 0.5) V.

The CAN 1, CAN 2, CAN 3, CAN 4, CAN 5, CAN 8, CAN 9, and CAN 10 buses are used to communicate between the K56 Serial Data Gateway Module and other CAN control modules.

The CAN 8 and CAN 9 buses are reserved for the following systems:

- The CAN 8 bus is reserved for most control modules and sensors related to active safety system, if applicable.
- The CAN 9 bus is reserved for most control modules and sensors related to Hybrid/EV system, if applicable.

The following CAN buses are between the X84 Data Link Connector and the K56 Serial Data Gateway Module:

- The CAN 6 bus is used for CAN diagnostics and programming.
- The CAN 7 bus is used for programming by assembly plant only.
- The Private Presentation CAN 1 bus (circuits 2577 & 2578) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.
- The Private Presentation CAN 2 bus (circuits 2579 & 2580) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.

Private Powertrain CAN Bus Description

The Private Powertrain CAN bus (circuits 4054 & 4055) is reserved for Powertrain components. It has a transmission rate of 500 Kbit/s. Sometimes communication is required between the Private Powertrain CAN bus and another CAN bus. This is accomplished by using the K20 Engine Control Module / K45 Powertrain Control Module (for gas vehicles) or K16 Battery Energy Control Module (for electric vehicles) as the Gateway module. Since the Private Powertrain CAN bus and other CAN buses operate in the same manner, the diagnostics for each are similar.

Local Interconnect Network (LIN) Bus Description

The LIN Bus consists of a single wire with a transmission rate of 10.417 Kbit/s or 19.23 Kbit/s. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality. This type of configuration does not require the capacity or speed of a CAN bus and is thus relatively simpler.

The data symbols (1's and 0's) to be transmitted are represented by different voltage levels on the communication bus. When the LIN Bus is at rest and is not being driven, the signal is in a high voltage state of approximately Vbatt. This represents a logic “1”. When a logic “0” is to be transmitted, the signal voltage is driven low to about ground (0.0 V).

Ethernet Bus Description

Ethernet is a data communication technology that uses a single twisted copper pair of wires at speeds of 100 Mbit/s and 1000 Mbit/s. The Ethernet system uses point-to-point communication that is connected via an Ethernet switch [Module <--> Switch <--> Module]. The Ethernet bus does not use terminating resistors.

The K56 Serial Data Gateway Module and the A11 Radio have an Ethernet switch that connects to other Ethernet modules. The K56 Serial Data Gateway Module and the A11 Radio communicate with other devices and systems in the vehicle via CAN and LIN buses. Diagnostic Trouble Codes will be read on CAN to diagnose Ethernet, LIN and system faults.

Note: Ethernet harness failures should only be repaired using an appropriate kit to perform de-pin/re-pin overlays or in cases where the wiring harness repair kits are not available, the entire harness should be replaced. No crimps or splicing should be performed on the Ethernet wiring harness.

Ethernet 1

Ethernet bus 1 consists of 2 twisted pair of wires [1 pair for Ethernet bus 1R (circuits 4972 & 4973) and 1 pair for Ethernet bus 1T (circuits 4974 & 4975)]. It is connected between X84 Data Link Connector (DLC) and K56 Serial Data Gateway Module. This bus is used for diagnostics and service programming of control modules using Ethernet instead of CAN. The K56 Serial Data Gateway Module will convert Ethernet serial data to CAN as necessary, and vice versa. There is an Ethernet enable circuit (circuit 7207) which can be used to wake up the K56 Serial Data Gateway Module for Ethernet diagnostic and programming.

Ethernet 2

Ethernet bus 2 (circuits 4757 & 4758) is for connection between the A11 Radio and the K56 Serial Data Gateway Module.

Ethernet 3

Ethernet bus 3 (circuits 7208 & 7209) is for connection between the following control modules depending on vehicle configuration:

- K56 Serial Data Gateway Module and K179 Automated Driving Mapping Module.
- K56 Serial Data Gateway Module and K124 Image Processing Module.
- K56 Serial Data Gateway Module and B174W Front View Camera - Windshield.

Ethernet 4

Ethernet bus 4 (circuits 7210 & 7211) is for connection between the following control modules:

- K56 Serial Data Gateway Module and K73 Telematic Control Module for vehicles equipped with IOR radio.
- A11 Radio and K73 Telematic Control Module for vehicles equipped with other radios.

Ethernet 5

Ethernet bus 5 (circuits 7212 & 7213) is for connection between the A11 Radio and P22F Video Display - Right Front Seat Back.

Ethernet 6

Ethernet bus 6 (circuits 7214 & 7215) is for connection between the A11 Radio and T3 Audio Amplifier.

Ethernet 7

Ethernet bus 7 (circuits 7216 & 7217) is for connection between the K56 Serial Data Gateway Module and P16 Instrument Panel Cluster Control Module or K190 Off-Board Charger Control Module.

Ethernet 11

Ethernet bus 11 (circuits 7224 & 7225) is for connection between the K124 Image Processing Module and K179 Automated Driving Mapping Module.

Ethernet 14

Ethernet bus 14 (circuits 7230 & 7231) is for connection between the A11 Radio and P29 Head-Up Display.

Ethernet 15

Ethernet bus 15 (circuits 7232 & 7233) is for connection between the K56 Serial Data Gateway Module, K161 Vehicle Performance Data Recorder, and P22F Video Display - Passenger Seat Back.

X84 Data Link Connector (DLC)

The X84 Data Link Connector is a standardized 16-cavity connector. Connector design and location is dictated by an industry wide standard, and is required to provide the following:

- Terminal 1: CAN Bus 7 Serial Data [+]
- Terminal 2: Private Presentation CAN Bus 1 Serial Data [+]
- Terminal 3: Ethernet Bus 1R [+]
- Terminal 4: Scan tool power ground
- Terminal 5: Common signal ground
- Terminal 6: CAN Bus 6 Serial Data [+]
- Terminal 7: Private Presentation CAN Bus 2 Serial Data [+]
- Terminal 8: Ethernet Bus 1 Enable Signal
- Terminal 9: CAN Bus 7 Serial Data [-]
- Terminal 10: Private Presentation CAN Bus 1 Serial Data [-]
- Terminal 11: Ethernet Bus 1R [-]
- Terminal 12: Ethernet Bus 1T [+]
- Terminal 13: Ethernet Bus 1T [-]
- Terminal 14: CAN Bus 6 Serial Data [-]
- Terminal 15: Private Presentation CAN Bus 2 Serial Data [-]
- Terminal 16: Scan tool power, B+

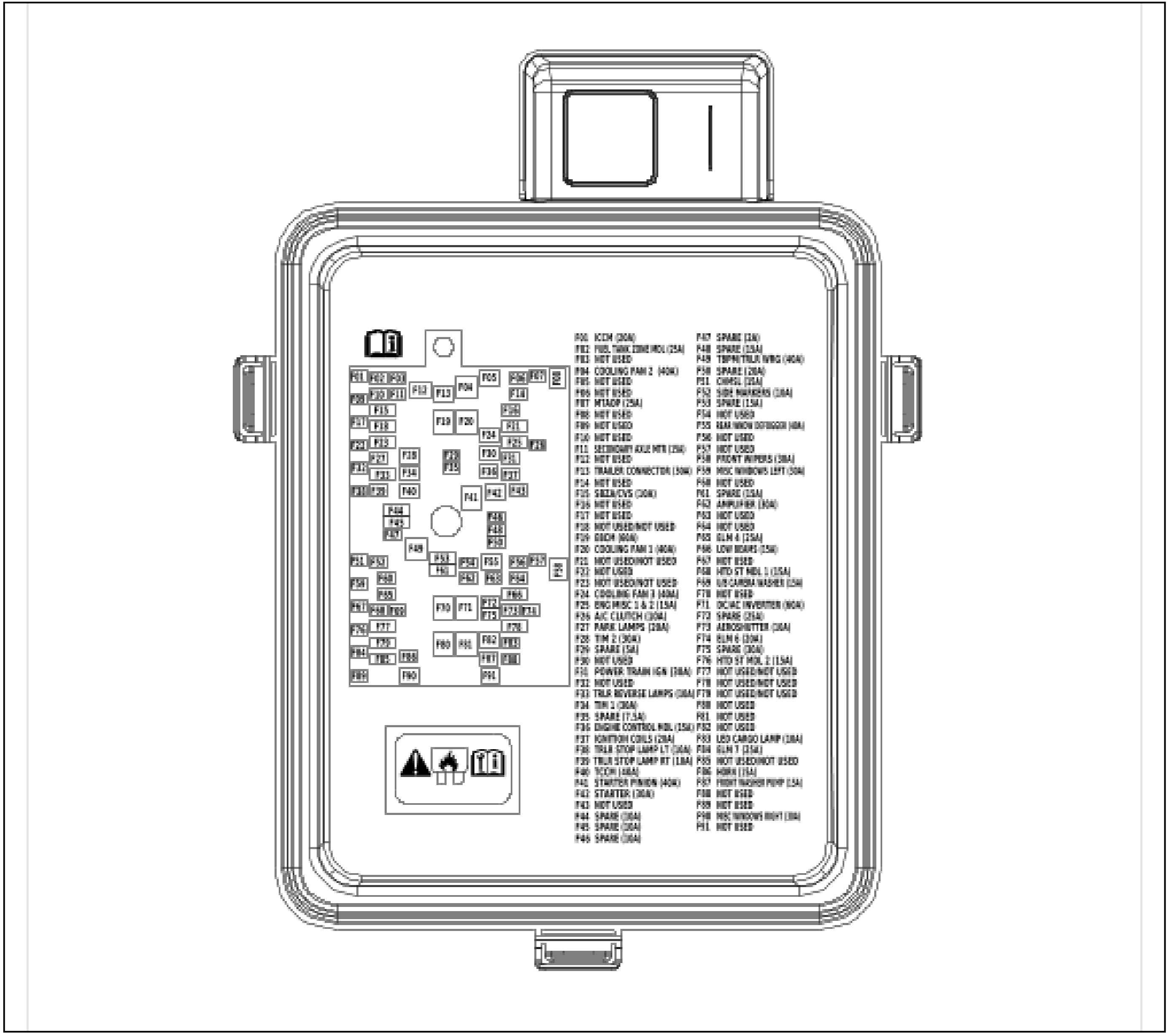
Serial Data Reference

The scan tool communicates over the various buses on the vehicle. When a scan tool is installed on a vehicle, the scan tool will try to communicate with every control module that could be optioned into the vehicle. If an option is not installed on the vehicle, the scan tool will display No Communication for that optional control module. In order to avert misdiagnoses of No Communication with a specific control module, refer to [Link target (target-id 148085-) not found] for a list of control modules and the buses they communicate with. Use schematics and specific vehicle build RPO codes to determine optional control modules.

Electrical Component and Inline Harness Connector End Views

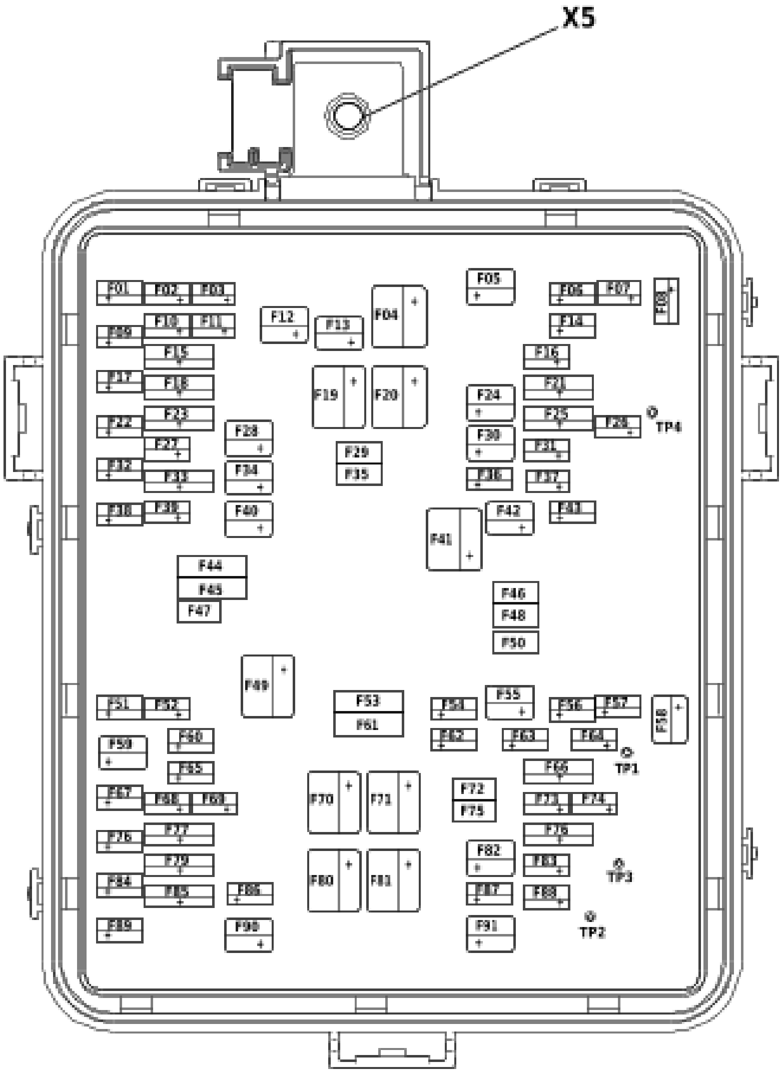
Component Locator

X50A Engine Wiring Harness Junction Block Label


F01 ICCM (30A)
F02 FUEL TANK ZONE MDL (25A)
F03 NOT USED
F04 COOLING FAN 2 (40A)
F05 NOT USED
F06 NOT USED
F07 MTAOP (25A)
F08 NOT USED
F09 NOT USED
F10 NOT USED
F11 SECONDARY AXLE MTR (25A)
F12 NOT USED
F13 TRAILER CONNECTOR (50A)
F14 NOT USED
F15 SBZA/CVS (20A)
F16 NOT USED
F17 NOT USED
F18 NOT USED/NOT USED
F19 EBCM (60A)
F20 COOLING FAN 1 (40A)
F21 NOT USED/NOT USED
F22 NOT USED
F23 NOT USED/NOT USED
F24 COOLING FAN 3 (40A)
F25 ENG MISC 1 & 2 (15A)
F26 A/C CLUTCH (10A)
F27 PARK LAMPS (20A)
F28 TIM 2 (30A)
F29 SPARE (5A)
F30 NOT USED
F31 POWER TRAIN IGN (20A)
F32 NOT USED
F33 TRLR REVERSE LAMPS (10A)
F34 TIM 1 (30A)
F35 SPARE (7.5A)
F36 ENGINE CONTROL MDL (15A)
F37 IGNITION COILS (20A)
F38 TRLR STOP LAMP LT (10A)
F39 TRLR STOP LAMP RT (10A)
F40 TCCM (40A)
F41 STARTER PINION (40A)
F42 STARTER (30A)
F43 NOT USED
F44 SPARE (20A)
F45 SPARE (20A)
F46 SPARE (10A)
F47 SPARE (1A)
F48 SPARE (15A)
F49 TBPM/TRLR WRG (40A)
F50 SPARE (20A)
F51 CHMSL (25A)
F52 SIDE MARKERS (10A)
F53 SPARE (15A)
F54 NOT USED
F55 REAR WNDW DEFOGGER (40A)
F56 NOT USED
F57 NOT USED
F58 FRONT WIPERS (30A)
F59 MISC WINDOWS LEFT (50A)
F60 NOT USED
F61 SPARE (15A)
F62 AMPLIFIER (30A)
F63 NOT USED
F64 NOT USED
F65 ELM 4 (25A)
F66 LOW BEAMS (15A)
F67 NOT USED
F68 HTD ST MDL 1 (15A)
F69 U/B CAMERA WASHER (15A)
F70 NOT USED
F71 DC/AC INVERTER (80A)
F72 SPARE (25A)
F73 AEROSHUTTER (10A)
F74 ELM 6 (20A)
F75 SPARE (30A)
F76 HTD ST MDL 2 (15A)
F77 NOT USED/NOT USED
F78 NOT USED/NOT USED
F79 NOT USED/NOT USED
F80 NOT USED
F81 NOT USED
F82 NOT USED
F83 LED CARGO LAMP (10A)
F84 ELM 7 (15A)
F85 NOT USED/NOT USED
F86 HORN (15A)
F87 FRONT WASHER PUMP (15A)
F88 NOT USED
F89 NOT USED
F90 MISC WINDOWS RIGHT (30A)
F91 NOT USED

6179241

X50A Engine Wiring Harness Junction Block Top View


X5
F01
F02
F03
F05
F06
F07
F08
F09
F10
F11
F12
F13
F04
F14
F15
F16
F17
F18
F19
F20
F21
F24
F22
F23
F25
F26
TP4
F28
F27
F29
F30
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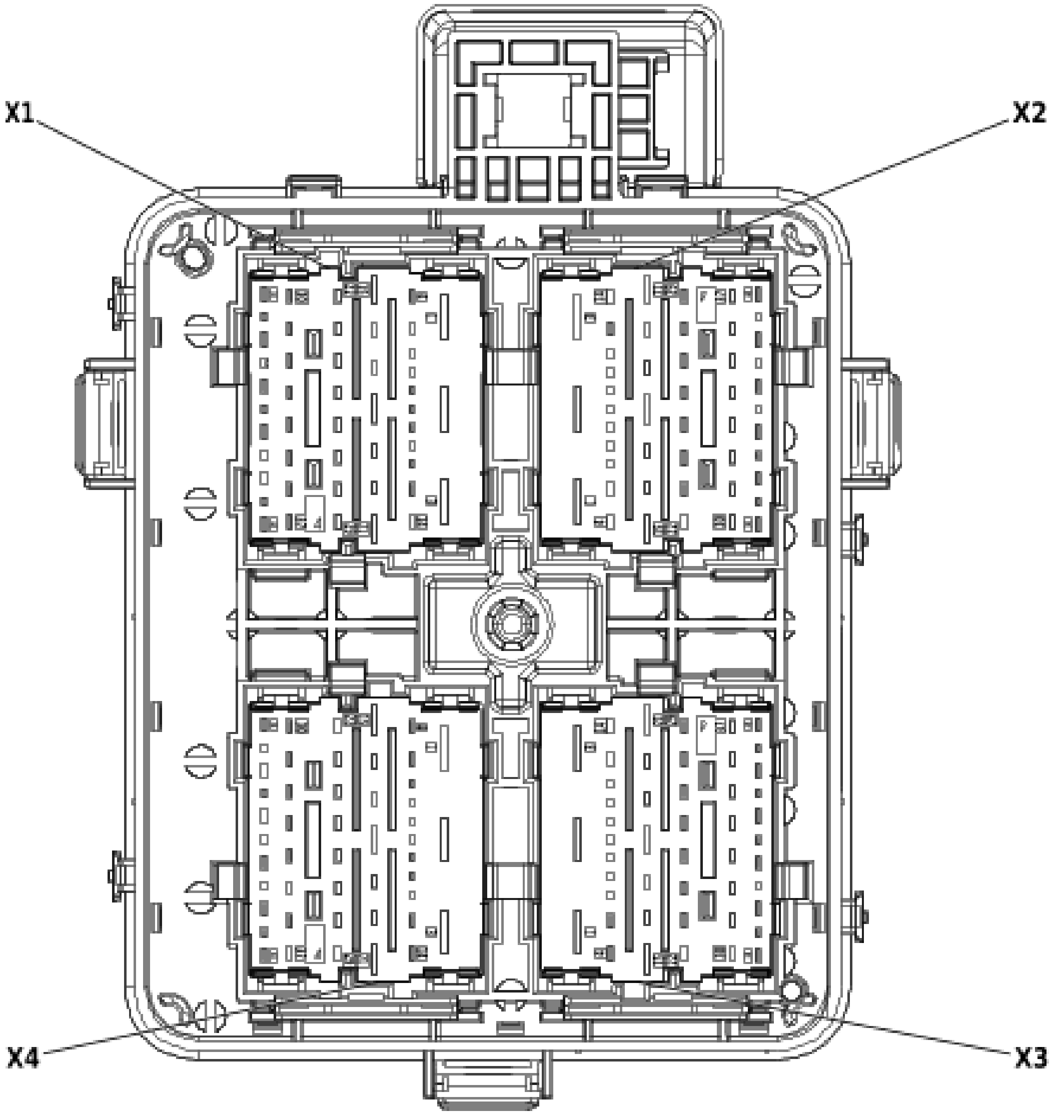
F36
F37
F38
F39
F40
F42
F43
F41
F44
F45
F46
F47
F48
F50
F49
F51
F52
F53
F54
F55
F56
F57
F58
F59
F60
F61
F62
F63
F64
TP1
F65
F66
F67
F68
F69
F70
F71
F72
F73
F74
F75
F76
F77
F78
F79
F80
F81
F82
F83
TP3
F84
F85
F86
F87
F88
F89
F90
F91
TP2

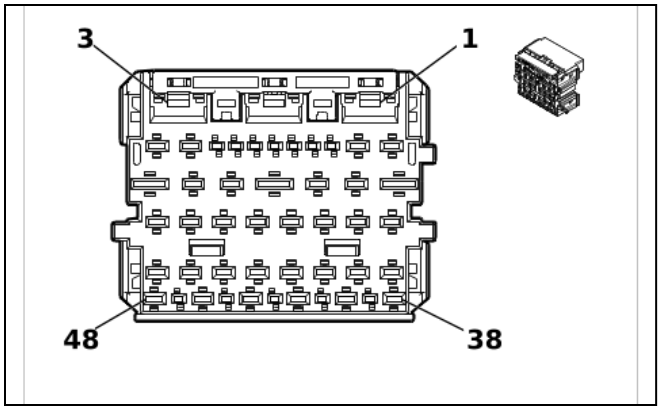
6179244

X50A Engine Wiring Harness Junction Block Bottom View



6179246

X50A Engine Wiring Harness Junction Block X1



5834300

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7298-4594-60
- Service Connector: 85595153
- Description: 48-Way F 1.5, 2.8, 6.3 MCP, 9.5 YESC Series(GN)

Terminal Part Information

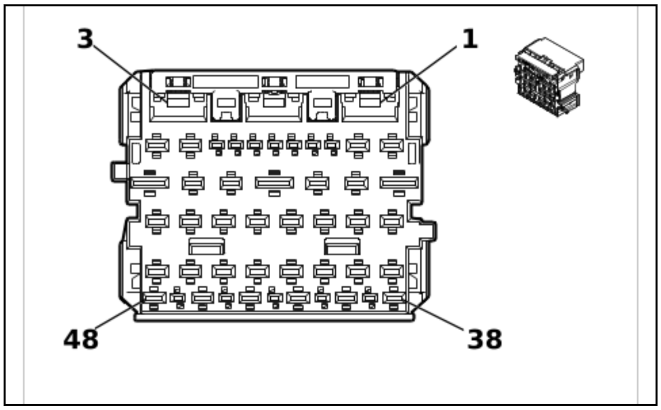
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19333301	J-35616-22 (RD)	J-38125-221
II	84764078	J-35616-42 (RD)	J-38125-221
III	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 4	(1) RD / VT	(1) 1242	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 6	(2) RD / BN	(2) 440	(2) Battery Positive Voltage	(2) I	(2) —
3 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 3	(15) RD / WH	(15) 2242	(15) Battery Positive Voltage	(15) II	(15) —
(16) 16	(16) 2.5	(16) RD / YE	(16) 5840	(16) Battery Positive Voltage	(16) III	(16) —
(17) 17	(17) 2.5	(17) RD / VT	(17) 5640	(17) Battery Positive Voltage	(17) III	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 3	(19) RD / GY	(19) 1042	(19) Battery Positive Voltage	(19) III	(19) —
20 - 26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) RD / WH	(27) 4140	(27) Battery Positive Voltage	(27) III	(27) —
(28) 28	(28) 0.5	(28) GN	(28) 8016	(28) Secondary Axle Motor Control	(28) III	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.75	(30) GN / VT	(30) 1619	(30) Right Rear Trailer Stop/Turn Lamp Control	(30) III	(30) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(31) 31	(31) 0.75	(31) WH / GN	(31) 1624	(31) Trailer Backup Lamp Control	(31) III	(31) —
(32) 32	(32) 1.5	(32) GY / BN	(32) 2109	(32) Trailer Park Lamp Control	(32) III	(32) —
33 - 34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) RD / BN	(35) 4940	(35) Battery Positive Voltage	(35) III	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 3	(37) RD / VT	(37) 1940	(37) Battery Positive Voltage	(37) III	(37) —
(38) 38	(38) 0.75	(38) YE / GY	(38) 1618	(38) Left Rear Trailer Stop/Turn Lamp Control	(38) III	(38) —
39 - 47	—	—	—	Not Occupied	—	—
(48) 48	(48) 1	(48) RD / WH	(48) 2140	(48) Battery Positive Voltage	(48) III	(48) —

X50A Engine Wiring Harness Junction Block X2



5838162

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 7298-4593-40
- Service Connector: 85595155
- Description: 48-Way F 1.5, 2.8, 6.3 MCP, 9.5 YESC Series(GY)

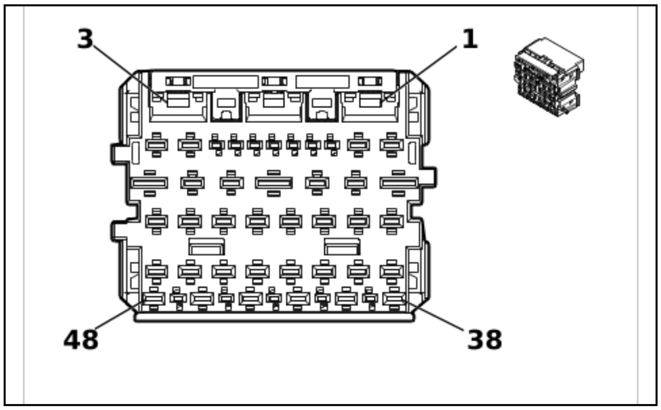
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19333301	J-35616-22 (RD)	J-38125-221
II	19369711	J-35616-14 (GN)	J-38125-557
III	84764078	J-35616-42 (RD)	J-38125-221
IV	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) RD / YE	(1) 1442	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 5	(2) RD / BU	(2) 1542	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 4	(3) YE / GN	(3) 4358	(3) Starter Pinion Solenoid Voltage	(3) I	(3) —
4 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) VT / GY	(10) 8017	(10) Secondary Axle Motor Relay Control	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) YE / VT	(12) 4325	(12) Starter Pinion Solenoid Actuator Relay Control	(12) II	(12) —
13 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 5	(18) RD / GY	(18) 1342	(18) Battery Positive Voltage	(18) III	(18) —
19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5	(20) RD / WH	(20) 140	(20) Battery Positive Voltage	(20) IV	(20) —
(21) 21	(21) 2.5	(21) YE	(21) 6	(21) Starter Solenoid Crank Ignition Voltage	(21) III	(21) —
22 - 25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.5	(26) VT / BU	(26) 5294	(26) Powertrain Main Relay Fused Supply Voltage 5	(26) IV	(26) —
(27) 27	(27) 2	(27) VT / BU	(27) 5290	(27) Powertrain Main Relay Fused Supply Voltage 1	(27) IV	(27) —
(28) 28	(28) 1	(28) VT / BU	(28) 5291	(28) Powertrain Main Relay Fused Supply Voltage 2	(28) IV	(28) —
29 - 33	—	—	—	Not Occupied	—	—
(34) 34	(34) 0.5	(34) VT / BU	(34) 5293	(34) Powertrain Main Relay Fused Supply Voltage 4	(34) IV	(34) —
(35) 35	(35) 0.5	(35) YE	(35) 5991	(35) Powertrain Relay Coil Control	(35) IV	(35) —
(36) 36	(36) 1	(36) YE / BK	(36) 625	(36) Starter Enable Relay Control	(36) IV	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 1.5	(38) RD / BU	(38) 840	(38) Battery Positive Voltage	(38) IV	(38) —
39 - 43	—	—	—	Not Occupied	—	—
(44) 44	(44) 0.75	(44) BN / GN	(44) 59	(44) Air Conditioning Compressor Clutch Control	(44) IV	(44) —
45 - 46	—	—	—	Not Occupied	—	—
(47) 47	(47) 0.5	(47) WH / GY	(47) 459	(47) Air Conditioning Compressor Clutch Relay Control	(47) II	(47) —
48	—	—	—	Not Occupied	—	—

X50A Engine Wiring Harness Junction Block X3



5833039

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7298-4633-90
- Service Connector: 85595154
- Description: 48-Way F 1.5, 2.8, 6.3 MCP, 9.5 YESC Series(BU)

Terminal Part Information

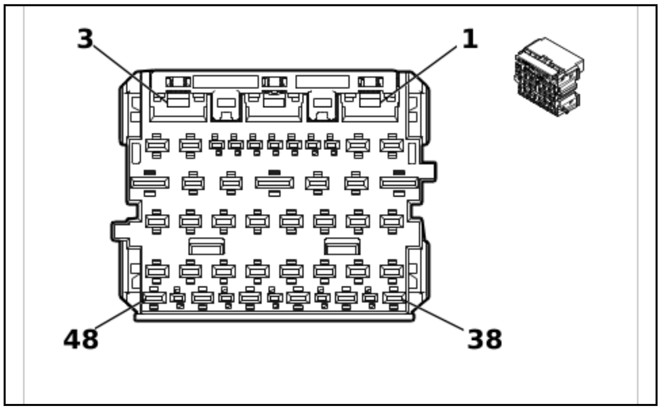
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19333301	J-35616-22 (RD)	J-38125-221
II	19369711	J-35616-14 (GN)	J-38125-557
III	84764078	J-35616-42 (RD)	J-38125-221
IV	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 5	(2) BN / BK	(2) 4629	(2) DC/AC Inverter Control	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 3	(5) RD / YE	(5) 3740	(5) Battery Positive Voltage	(5) IV	(5) —
(6) 6	(6) 0.35	(6) BN / VT	(6) 193	(6) Rear Defogger Relay Control	(6) II	(6) —
7 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) WH / GN	(11) 4628	(11) DC/AC Inverter Relay Control	(11) II	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) BN / GY	(13) 2268	(13) Windshield Washer Relay Control	(13) IV	(13) —
(14) 14	(14) 0.75	(14) BK	(14) 2250	(14) Ground	(14) IV	(14) —
(15) 15	(15) 2.5	(15) BN / VT	(15) 293	(15) Rear Defogger Grid Control	(15) III	(15) —
16 - 19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.75	(20) GY / VT	(20) 228	(20) Windshield Washer Pump Control	(20) IV	(20) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
21 - 23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.75	(24) RD / WH	(24) 640	(24) Battery Positive Voltage	(24) IV	(24) —
(25) 25	(25) 0.5	(25) VT / BU	(25) 5705	(25) Powertrain Main Relay Control	(25) IV	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.75	(27) RD / BU	(27) 840	(27) Battery Positive Voltage	(27) IV	(27) —
28 - 31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.75	(32) RD / YE	(32) 740	(32) Battery Positive Voltage	(32) IV	(32) —
(33) 33	(33) 1	(33) RD / VT	(33) 1640	(33) Battery Positive Voltage	(33) IV	(33) —
34 - 40	—	—	—	Not Occupied	—	—
(41) 41	(41) 0.35	(41) GY	(41) 91	(41) Windshield Wiper Motor Relay Coil Control	(41) II	(41) —
42 - 43	—	—	—	Not Occupied	—	—
(44) 44	(44) 2.5	(44) BK	(44) 150	(44) Ground	(44) IV	(44) —
45	—	—	—	Not Occupied	—	—
(46) 46	(46) 2.5	(46) YE / BN	(46) 95	(46) Windshield Wiper Motor Low Speed Control	(46) IV	(46) —
(47) 47	(47) 0.35	(47) WH / VT	(47) 860	(47) Windshield Wiper Switch High Signal	(47) II	(47) —
(48) 48	(48) 2.5	(48) WH	(48) 92	(48) Windshield Wiper Motor High Speed Control	(48) IV	(48) —

X50A Engine Wiring Harness Junction Block X4



5830395

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7298-4588-30
- Service Connector: 85650078
- Description: 48-Way F 1.5, 2.8, 6.3 MCP, 9.5 YESC Series(BK)

Terminal Part Information

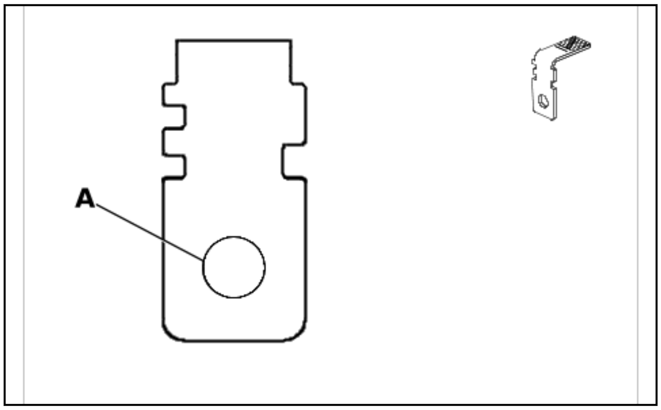
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19333301	J-35616-22 (RD)	J-38125-221
II	19369711	J-35616-14 (GN)	J-38125-557
III	84764078	J-35616-42 (RD)	J-38125-221
IV	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 4	(3) RD / BN	(3) 4142	(3) Primary Fused Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 2.5	(4) BK	(4) 2250	(4) Ground	(4) IV	(4) —
(5) 5	(5) 0.35	(5) BN / WH	(5) 28	(5) Horn Relay Control	(5) IV	(5) —
6 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 2.5	(15) RD / GY	(15) 3540	(15) Battery Positive Voltage	(15) III	(15) —
(16) 16	(16) 0.75	(16) BN / GY	(16) 29	(16) Horn Control	(16) IV	(16) —
(17) 17	(17) 0.5	(17) RD / VT	(17) 3340	(17) Battery Positive Voltage	(17) IV	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) GN / WH	(19) 2270	(19) Rear Window Washer Relay Control	(19) IV	(19) —
20 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 2.5	(22) RD / GY	(22) 3540	(22) Battery Positive Voltage	(22) IV	(22) —
23 - 25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.75	(26) BU / VT	(26) 392	(26) Rear Window Washer Pump Control	(26) IV	(26) —
(27) 27	(27) 1.5	(27) RD / BN	(27) 1440	(27) Battery Positive Voltage	(27) IV	(27) —
28	—	—	—	Not Occupied	—	—
(29) 29	(29) 0.35	(29) BU / BN	(29) 38	(29) Backup Lamp Relay Control	(29) IV	(29) —
(30) 30	(30) 2.5	(30) RD / YE	(30) 4340	(30) Battery Positive Voltage	(30) IV	(30) —
31 - 33	—	—	—	Not Occupied	—	—
(34) 34	(34) 0.75	(34) RD / BU	(34) 4540	(34) Battery Positive Voltage	(34) IV	(34) —
(35) 35	(35) 0.35	(35) WH / BN	(35) 7055	(35) Auxiliary Park Lamp Relay Control	(35) IV	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BN / GN	(37) 4246	(37) Identification Lamp Control	(37) IV	(37) —
38 - 39	—	—	—	Not Occupied	—	—
(40) 40	(40) 1.5	(40) RD / GY	(40) 1740	(40) Battery Positive Voltage	(40) IV	(40) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.75	(42) RD / VT	(42) 4640	(42) Battery Positive Voltage	(42) IV	(42) —
(43) 43	(43) 0.35	(43) GN / BN	(43) 319	(43) Right Rear Trailer Stop/Turn Lamp Control	(43) II	(43) —
44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.35	(45) BN / YE	(45) 820	(45) Center High Mounted Stop Lamp Supply Voltage	(45) II	(45) —
(46) 46	(46) 2.5	(46) RD / BU	(46) 1240	(46) Battery Positive Voltage	(46) IV	(46) —
(47) 47	(47) 0.35	(47) YE / BU	(47) 318	(47) Left Rear Trailer Stop/Turn Lamp Control	(47) II	(47) —
(48) 48	(48) 0.5	(48) BU / BK	(48) 1053	(48) Center High Mounted Stop Lamp Control 3	(48) IV	(48) —

X50A Engine Wiring Harness Junction Block X5



5881235

Connector Part Information

- Harness Type: Battery Negative Cable Extension Cable
- OEM Connector: 1137701
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

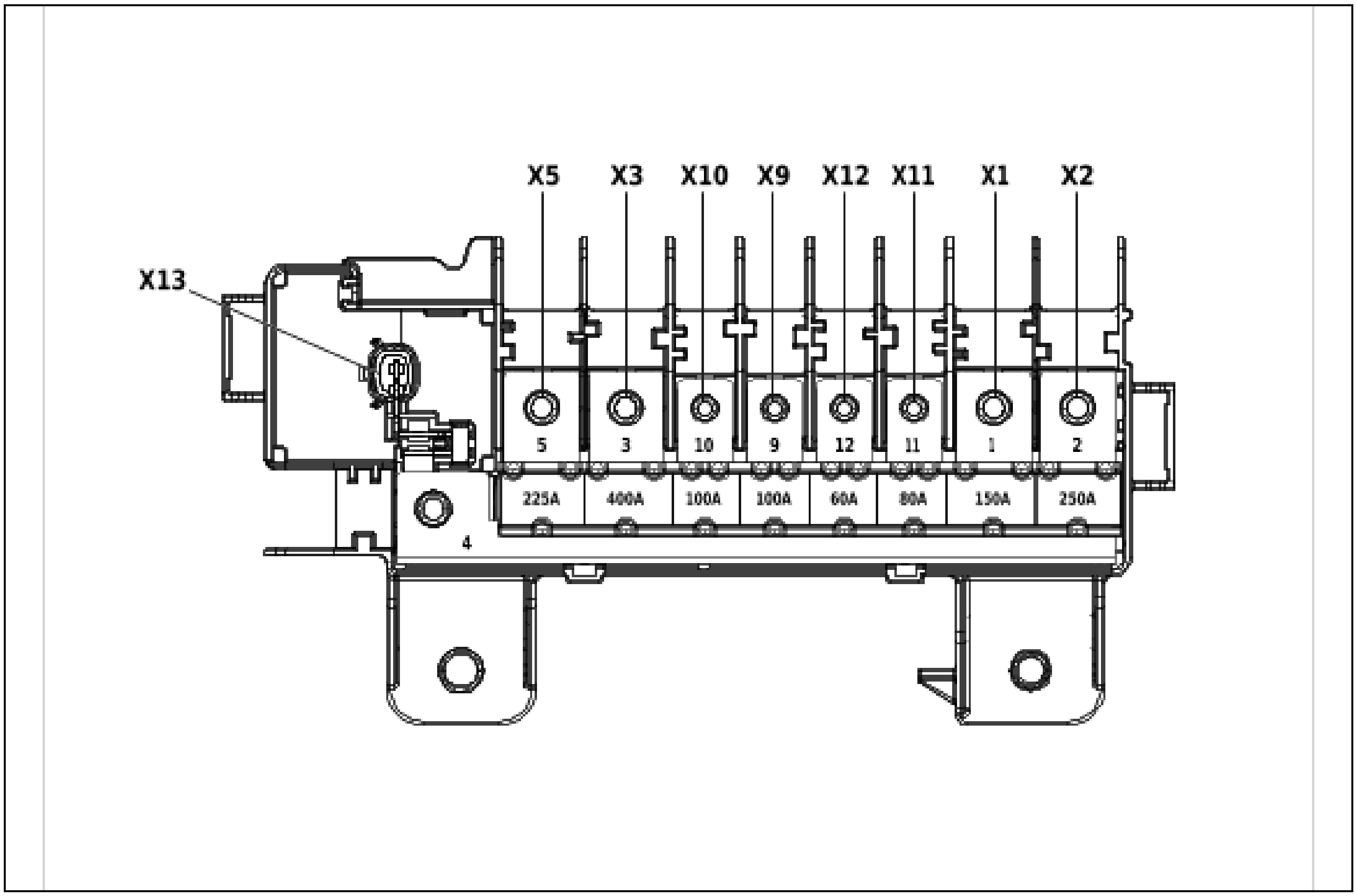
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50A Engine Wiring Harness Junction Block X5

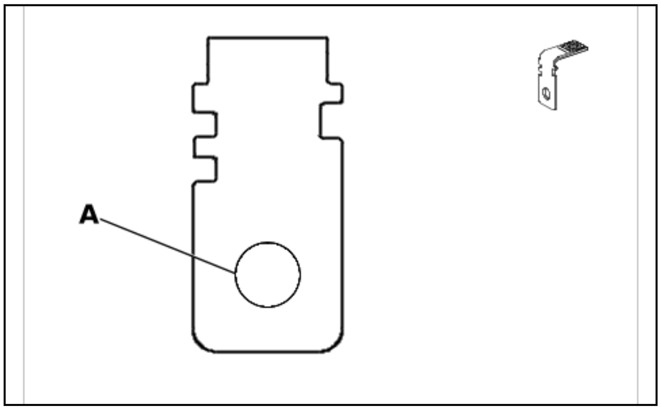
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / WH	4042	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block Top View


X5
X3
X10
X9
X12
X11
X1
X2
X13
5
3
10
9
12
11
1
2
225A
400A
100A
100A
60A
80A
150A
250A
4

6179249

X50B Battery Distribution Engine Compartment Fuse Block X1



5877003

Connector Part Information

- Harness Type: Battery Negative Cable Extension Cable
- OEM Connector: 1137501
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

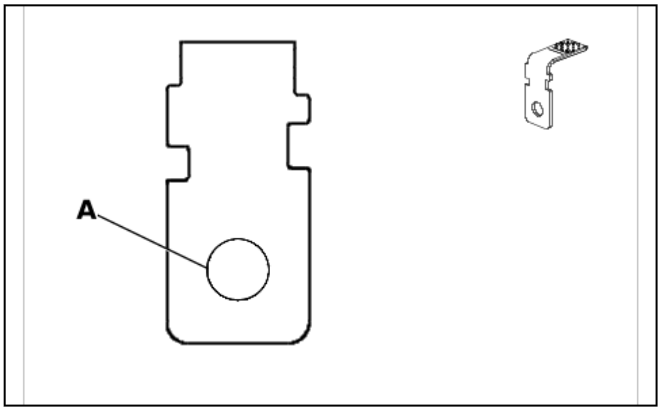
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	20	RD / VT	542	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X2



5902836

Connector Part Information

- Harness Type: Battery Negative Cable Extension Cable
- OEM Connector: 1137601
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

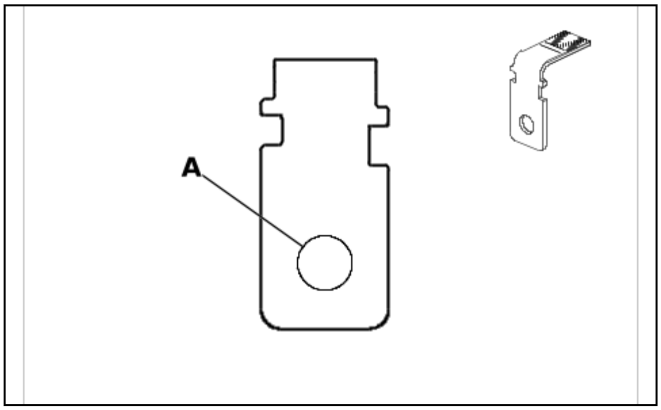
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / WH	4042	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X3



6239421

Connector Part Information

- Harness Type: Battery Negative Cable
- OEM Connector: 1137401
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

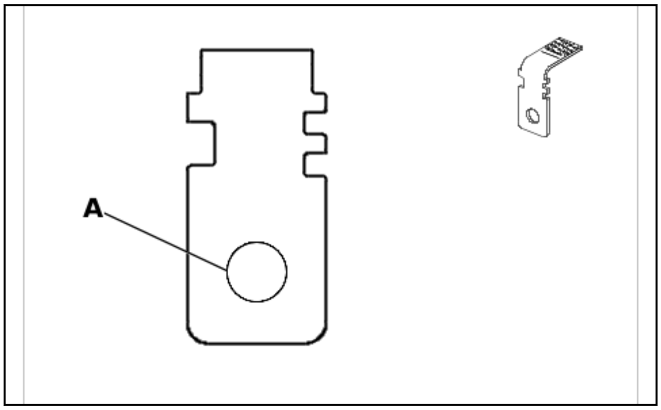
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X4



5946218

Connector Part Information

- Harness Type: Battery Negative Cable
- OEM Connector: 1137201
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

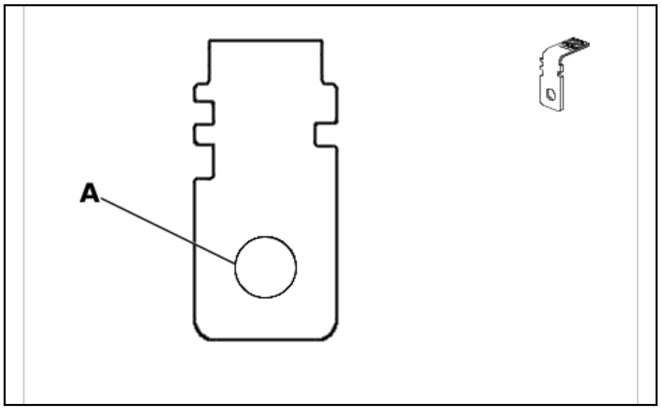
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD	0	—	I	—

X50B Battery Distribution Engine Compartment Fuse Block X5



5876995

Connector Part Information
- Harness Type: Battery Negative Cable
- OEM Connector: 1137301
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

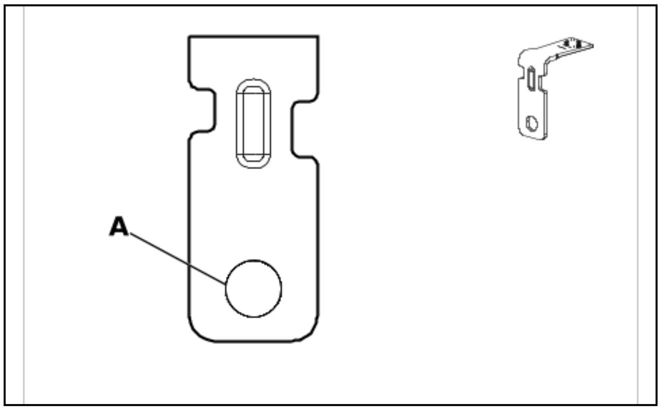
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X9



6143257

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1136802
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

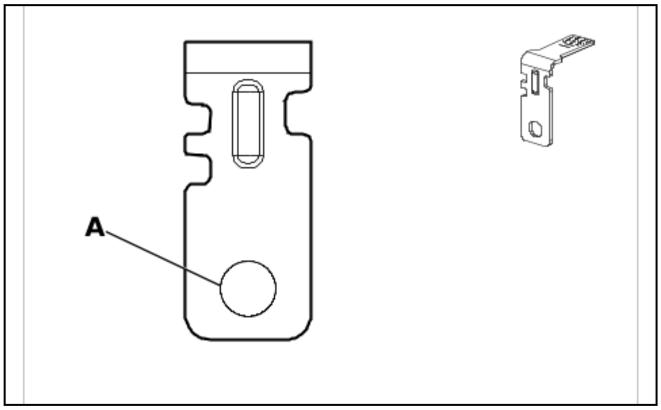
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X9

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / GN	742	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X10



6143262

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1136902
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

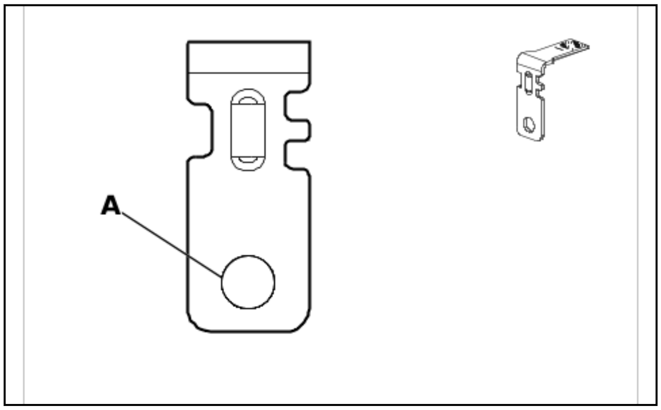
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X10

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / VT	542	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X11



6143251

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 85528456
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

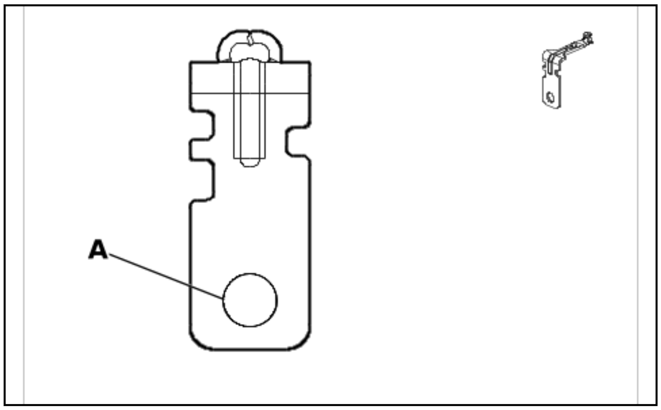
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X11

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / YE	442	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X12



5877012

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 84841283
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

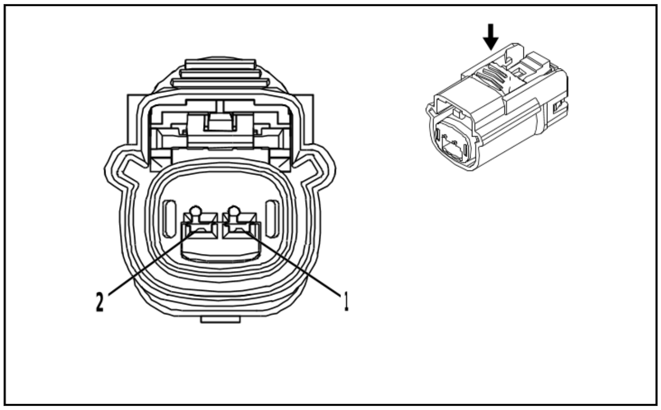
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X12

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	6	RD / WH	342	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X13



4332222

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33314786
- Service Connector: 19368124
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

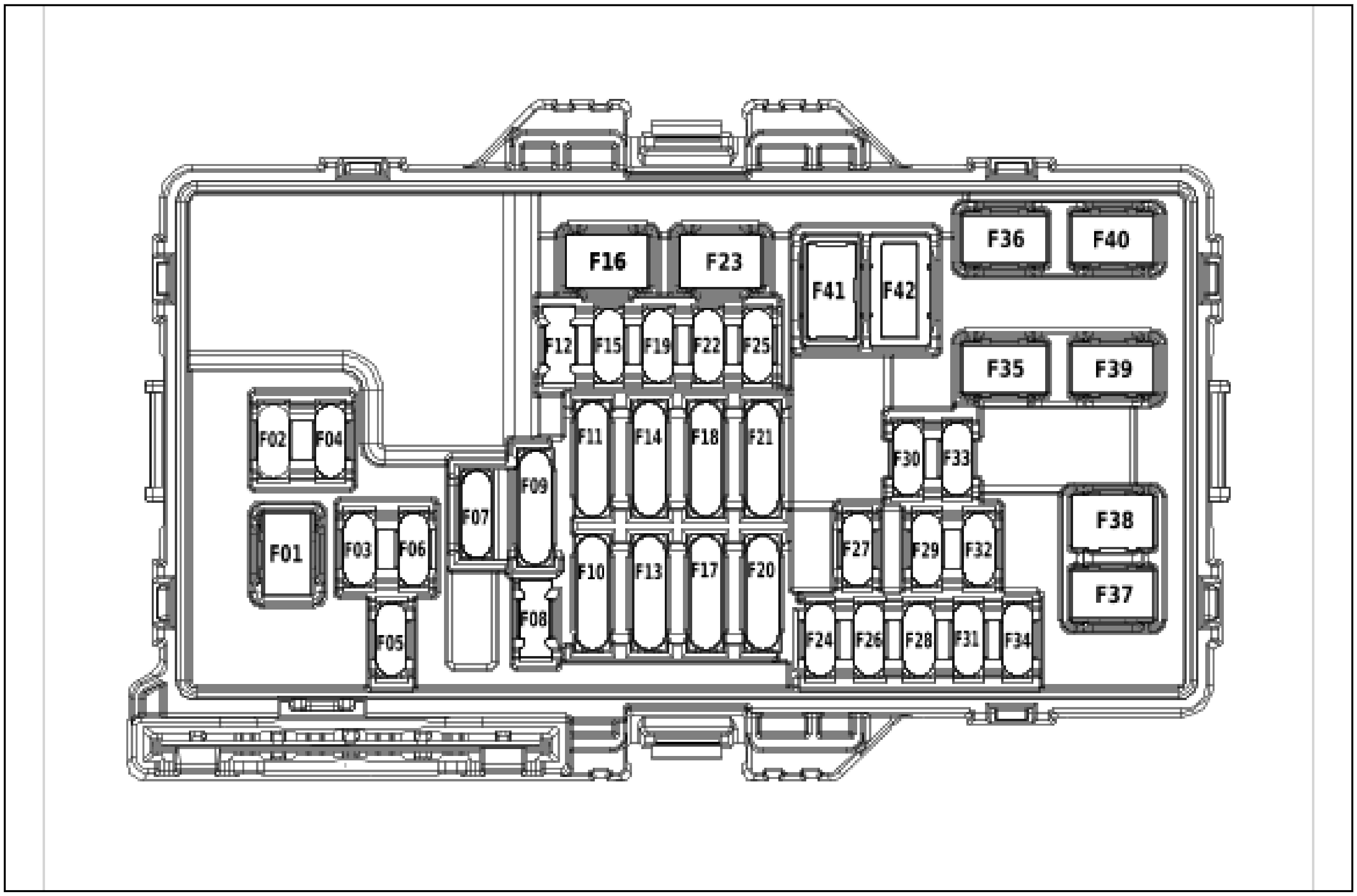
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X13

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / YE	(1) 2340	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—

X51A Instrument Panel Wiring Harness Junction Block Top View


F16
F23
F41
F42
F36
F40
F35
F39
F12
F15
F19
F22
F25
F02
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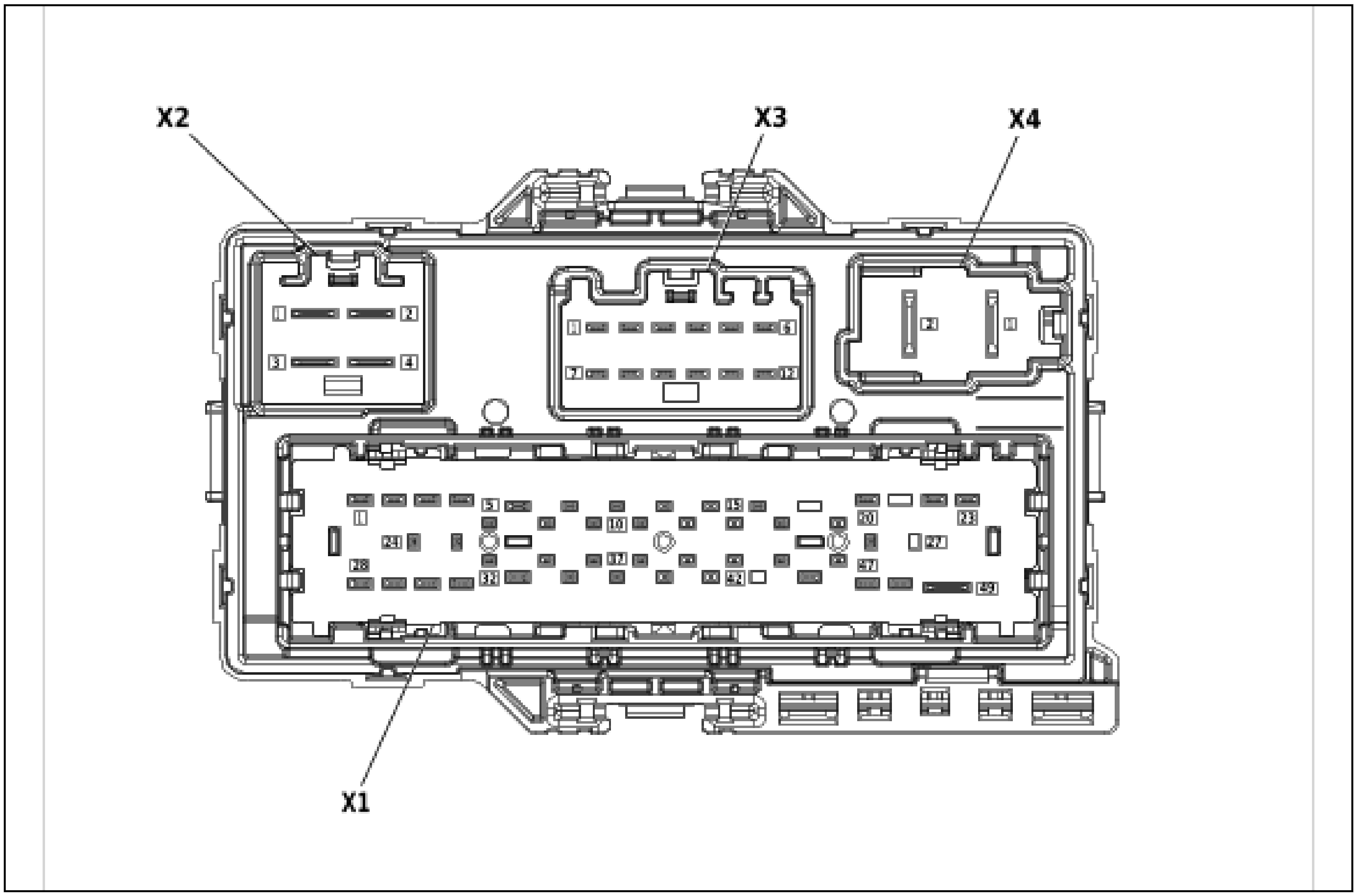
F01
F03
F06
F05
F07
F09
F08
F11
F14
F18
F21
F10
F13
F17
F20
F30
F33
F27
F29
F32
F38
F37
F24
F26
F28
F31
F34

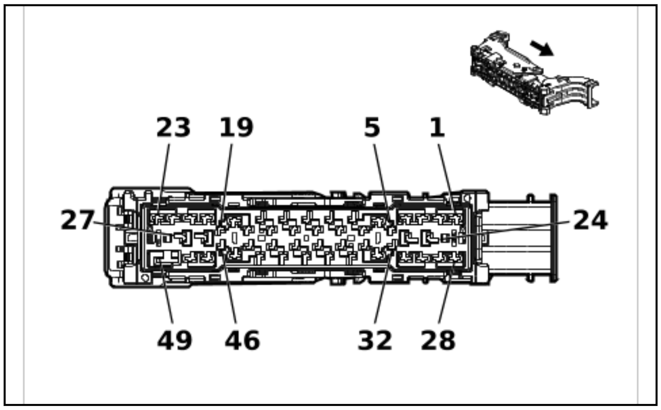
6179245

X51A Instrument Panel Wiring Harness Junction Block Bottom View


X2
X3
X4
X1
1
2
3
4
6
7
12
5
15
20
23
24
27
28
10
17
32
42
47
49

6179248

X51A Instrument Panel Wiring Harness Junction Block X1


23
19
5
1
27
24
49
46
32
28

5835272

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13537037
- Service Connector: 85564872
- Description: 49-Way F 1.5, 2.8, 6.3 Kaizen Series(BK)

Terminal Part Information

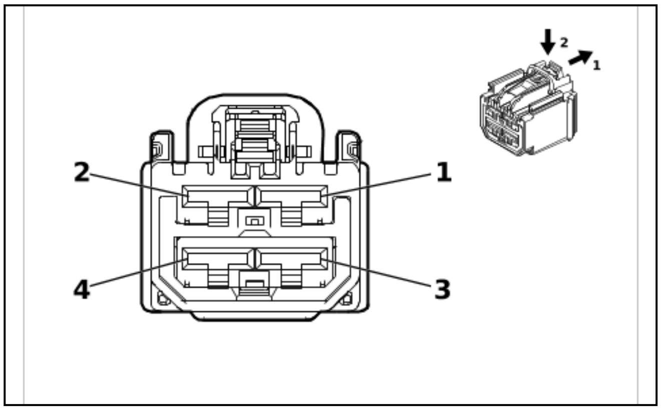
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575835	J-35616-42 (RD)	J-38125-11A
II	13575850	J-35616-2A (GY)	J-38125-557
III	85067553	J-35616-4A (PU)	J-38125-554
IV	Not required	No Tool Required	No Tool Required

X51A Instrument Panel Wiring Harness Junction Block X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) RD / GN	(3) 1540	(3) Battery Positive Voltage	(3) III	(3) —
(4) 4	(4) 1.5	(4) RD / WH	(4) 1340	(4) Battery Positive Voltage	(4) III	(4) —
(5) 5	(5) 0.5	(5) RD / VT	(5) 1940	(5) Battery Positive Voltage	(5) II	(5) —
(6) 6	(6) 1	(6) VT	(6) 1001	(6) Retained Accessory Power Ignition Voltage	(6) III	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) VT	(8) 4701	(8) Retained Accessory Power Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) RD / BN	(9) 1440	(9) Battery Positive Voltage	(9) II	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) VT / WH	(11) 1139	(11) Run/Crank Ignition 1 Voltage	(11) II	(11) —
(12) 12	(12) 0.5	(12) VT / BK	(12) 739	(12) Run/Crank Ignition 1 Voltage	(12) II	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) RD / WH	(14) 7240	(14) Battery Positive Voltage	(14) II	(14) —
(15) 15	(15) 0.5	(15) RD / BU	(15) 3240	(15) Battery Positive Voltage	(15) II	(15) —
16 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) GN / VT	(19) 5199	(19) Run/Crank Relay Coil Control	(19) II	(19) —
(20) 20	(20) 0.75	(20) RD / WH	(20) 2740	(20) Battery Positive Voltage	(20) III	(20) —
21	—	—	—	Not Occupied	—	—
(22) 22	(22) 1	(22) RD / BU	(22) 1240	(22) Battery Positive Voltage	(22) III	(22) —
(23) 23	(23) 1	(23) RD / BN	(23) 1140	(23) Battery Positive Voltage	(23) III	(23) —
(24) 24	(24) 0.35	(24) RD / BN	(24) 40	(24) Battery Positive Voltage	(24) II	(24) —
25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.35	(26) GY / GN	(26) 4083	(26) Retained Accessory Power Relay 2 Coil Control	(26) II	(26) —
(27) 27	(27) 0.75	(27) RD / GN	(27) 1840	(27) Battery Positive Voltage	(27) II	(27) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(28) 28	(28) 0.75	(28) RD / WH	(28) 3440	(28) Battery Positive Voltage	(28) III	(28) —
(29) 29	(29) 2	(29) RD / BU	(29) 2540	(29) Battery Positive Voltage	(29) III	(29) —
(30) 30	(30) 0.75	(30) RD / BN	(30) 2240	(30) Battery Positive Voltage	(30) III	(30) —
(31) 31	(31) 1	(31) RD / GY	(31) 2140	(31) Battery Positive Voltage	(31) III	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 1	(33) RD / GY	(33) 2840	(33) Battery Positive Voltage	(33) III	(33) —
(34) 34	(34) 0	(34) RD / VT	(34) 4040	(34) Battery Positive Voltage	(34) IV	(34) —
(35) 35	(35) 0.35	(35) RD / WH	(35) 4740	(35) Battery Positive Voltage	(35) II	(35) —
(36) 36	(36) 0.35	(36) VT / GN	(36) 39	(36) Run/Crank Ignition 1 Voltage	(36) II	(36) —
(37) 37	(37) 0.5	(37) RD / BU	(37) 3240	(37) Battery Positive Voltage	(37) II	(37) —
(38) 38	(38) 0.5	(38) RD / VT	(38) 6340	(38) Battery Positive Voltage	(38) II	(38) —
(39) 39	(39) 0.35	(39) RD / WH	(39) 6440	(39) Battery Positive Voltage	(39) II	(39) —
(40) 40	(40) 0.5	(40) RD / GN	(40) 4440	(40) Battery Positive Voltage	(40) II	(40) —
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) RD / VT	(42) 4040	(42) Battery Positive Voltage	(42) II	(42) —
43 - 45	—	—	—	Not Occupied	—	—
(46) 46	(46) 0.35	(46) RD / GN	(46) 5140	(46) Battery Positive Voltage	(46) II	(46) —
47	—	—	—	Not Occupied	—	—
(48) 48	(48) 0.35	(48) RD / VT	(48) 3340	(48) Battery Positive Voltage	(48) III	(48) —
(49) 49	(49) 5	(49) RD / WH	(49) 2040	(49) Battery Positive Voltage	(49) I	(49) —

X51A Instrument Panel Wiring Harness Junction Block X2



5492913

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7459-40
- Service Connector: 84766433
- Description: 4-Way F 6.3 YESC Series(GY)

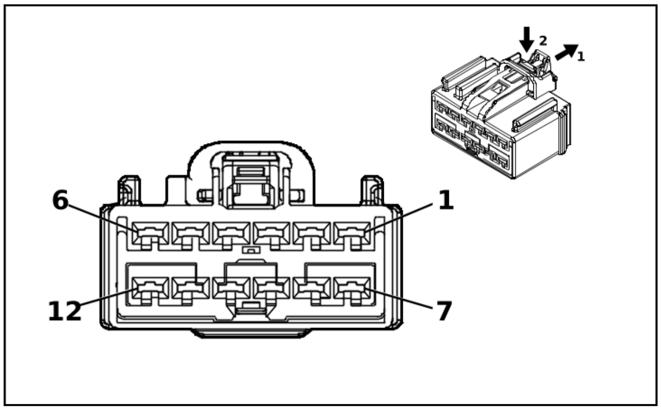
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

X51A Instrument Panel Wiring Harness Junction Block X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / YE	(1) 4340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 2.5	(2) RD / BU	(2) 2540	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 2.5	(3) RD / GY	(3) 3540	(3) Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 2.5	(4) RD / VT	(4) 2640	(4) Battery Positive Voltage	(4) I	(4) —

X51A Instrument Panel Wiring Harness Junction Block X3



5254826

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-9152-40
- Service Connector: 13518424
- Description: 12-Way F 2.8 Kaizen Series(L-GY)

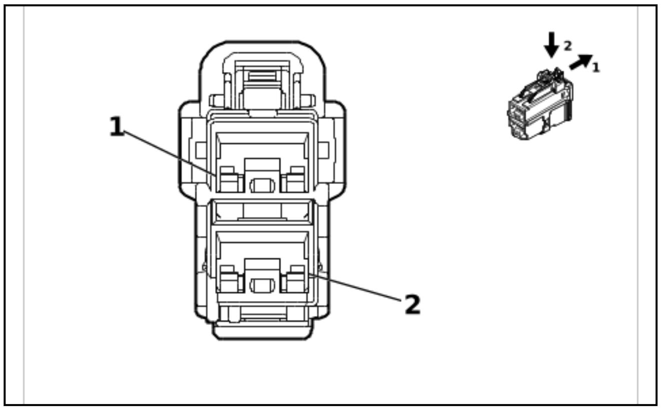
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368264	J-35616-4A (PU)	J-38125-11A

X51A Instrument Panel Wiring Harness Junction Block X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / GN	(1) 2173	(1) 12V Regulated Supply Voltage 2	(1) I	(1) —
(2) 2	(2) 1.5	(2) RD / YE	(2) 2340	(2) Battery Positive Voltage	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BK / WH	(5) 451	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 2.5	(6) RD / YE	(6) 2172	(6) 12V Regulated Supply Voltage 1	(6) I	(6) —
(7) 7	(7) 0.35	(7) RD / YE	(7) 240	(7) Battery Positive Voltage	(7) I	(7) —
(8) 8	(8) 0.5	(8) RD / VT	(8) 1640	(8) Battery Positive Voltage	(8) I	(8) —
(9) 9	(9) 0.35	(9) RD / VT	(9) 1640	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) VT / BK	(10) 739	(10) Run/Crank Ignition 1 Voltage	(10) I	(10) —
(11) 11	(11) 0.5 (11) 0.35	(11) VT / BK (11) VT / WH	(11) 739 (11) 1139	(11) Run/Crank Ignition 1 Voltage (11) Run/Crank Ignition 1 Voltage	(11) I (11) I	(11) KI7/ KCA/ KI6/ KC9/ KU9 (11) KI7- KCA- KI6- KC9- KU9
12	—	—	—	Not Occupied	—	—

X51A Instrument Panel Wiring Harness Junction Block X4



5835292

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7289-8732-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 YESC Series(BK)

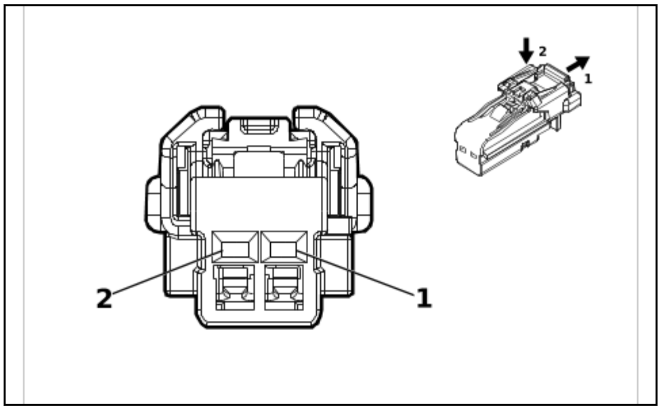
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

X51A Instrument Panel Wiring Harness Junction Block X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 10	(1) RD / VT	(1) 542	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 10	(2) RD / GN	(2) 742	(2) Battery Positive Voltage	(2) I	(2) —

A3L Sunshade - Left (DEG)



4115691

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

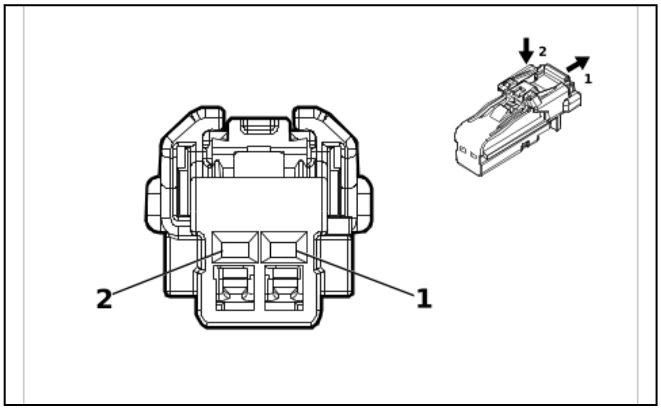
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

A3L Sunshade - Left (DEG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 6815	(1) Inadvertent Load Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK	(2) 4250	(2) Ground	(2) I	(2) —

A3R Sunshade - Right (DEG)



4115691

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

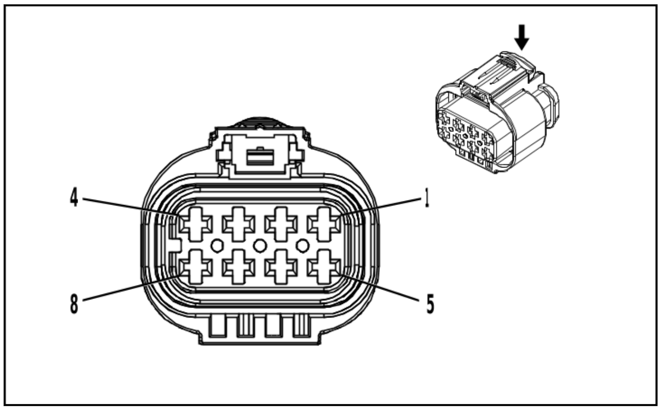
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

A3R Sunshade - Right (DEG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 6815	(1) Inadvertent Load Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK	(2) 4250	(2) Ground	(2) I	(2) —

A7 Fuel Tank Fuel Pump Module



3749582

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2-2109441-5
- Service Connector: 19354078
- Description: 8-Way F 2.8 Series, Sealed(L-GY)

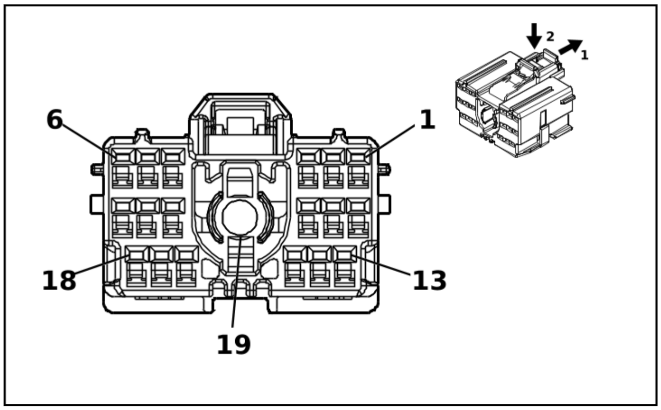
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

A7 Fuel Tank Fuel Pump Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY	(1) 120	(1) Fuel Pump Control	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / GY	(2) 4137	(2) Fuel Pump Supply Voltage Phase 2	(2) I	(2) —
(3) 3	(3) 2.5	(3) WH / BN	(3) 4138	(3) Fuel Pump Supply Voltage Phase 3	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU	(4) 7444	(4) Fuel Pump Assembly Shield Ground	(4) II	(4) —
(5) 5	(5) 0.5	(5) BU / GN	(5) 1936	(5) Primary Fuel Level Sensor Signal	(5) II	(5) —
(6) 6	(6) 0.5	(6) BK / GN	(6) 6281	(6) Fuel Level Sensor Low Reference	(6) II	(6) —
7 - 8	—	—	—	Not Occupied	—	—

A9A Outside Rearview Mirror - Driver



5253439

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver COAX
- OEM Connector: 6098-8386
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series(BK)

Terminal Part Information

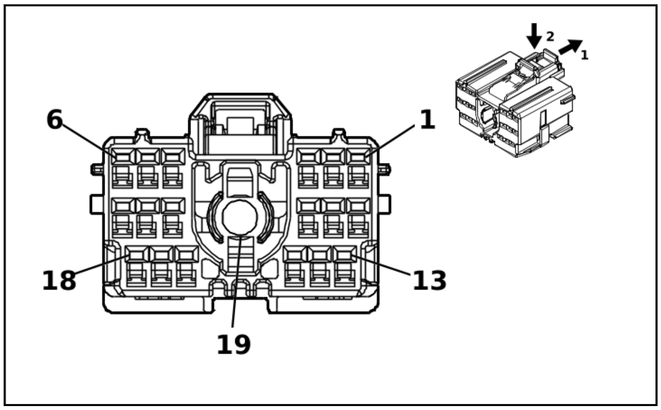
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A9A Outside Rearview Mirror - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 2790	(1) Left Front Mirror Motor Right [+] Left [-] Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / BU	(2) 2788	(2) Left Front Mirror Motor Up [+] Down [-] Control	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) GY / YE	(4) 1760	(4) Left Side Object Detection LED Control	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) WH / YE	(6) 2792	(6) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 606	(7) Left Outside Rearview Mirror Heater Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) BK	(9) 3750	(9) Ground	(9) I	(9) —
(10) 10	(10) 0.35	(10) VT / RD	(10) 2791	(10) Left Front Mirror Position Sensor High Reference	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY / BN	(11) 2787	(11) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(11) I	(11) —
12 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) YE / BN	(14) 2789	(14) Left Front Mirror Motor Common Control	(14) I	(14) —
15 - 17	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(18) 18	(18) 0.35	(18) BK / BN	(18) 673	(18) Left Outside Rearview Mirror Position Sensor Low Reference	(18) I	(18) —
(19) 19	(19) 0	(19) Coax Cable	(19) 4725	(19) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(19) I	(19) —

A9B Outside Rearview Mirror - Passenger



5253439

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 6098-8386
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series(BK)

Terminal Part Information

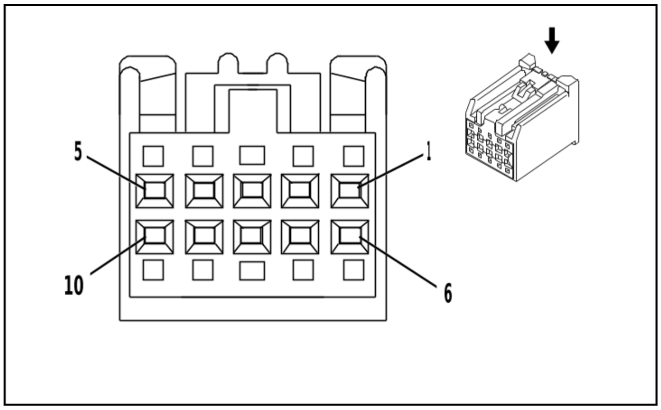
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A9B Outside Rearview Mirror - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / BK	(1) 2798	(1) Right Front Mirror Motor Right [+] Left [-] Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / VT	(2) 2796	(2) Right Front Mirror Motor Up [+] Down [-] Control	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) GY	(4) 1761	(4) Right Side Object Detection LED Control	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) VT / WH	(6) 2800	(6) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / VT	(7) 607	(7) Right Outside Rearview Mirror Heater Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) BK	(9) 4450	(9) Ground	(9) I	(9) —
(10) 10	(10) 0.35	(10) YE / RD	(10) 2799	(10) Right Front Mirror Position Sensor High Reference	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / YE	(11) 2795	(11) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(11) I	(11) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
12 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) WH	(14) 2797	(14) Right Front Mirror Motor Common Control	(14) I	(14) —
15 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) BK / GN	(18) 675	(18) Right Outside Rearview Mirror Position Sensor Low Reference	(18) I	(18) —
(19) 19	(19) 0	(19) Coax Cable	(19) 4724	(19) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(19) I	(19) —

A10 Inside Rearview Mirror



2180211

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: AIT2PB-10P-2AK
- Service Connector: 13577390
- Description: 10-Way F 0.64 Kaizen Series(BK)

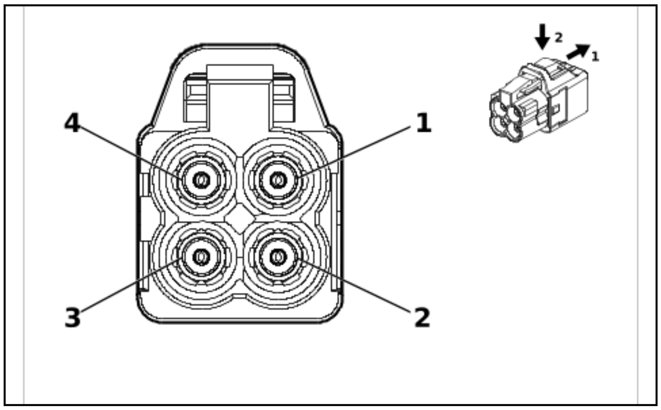
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575742	J-35616-64B (L-BU)	J-38125-215A

A10 Inside Rearview Mirror

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / WH	(1) 24	(1) Backup Lamp Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / WH	(2) 1139	(2) Run/Crank Ignition 1 Voltage	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BK / WH	(5) 1851	(5) Signal Ground	(5) I	(5) —
6 - 10	—	—	—	Not Occupied	—	—

A11 Radio X1



5835118

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13544819
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type(BK)

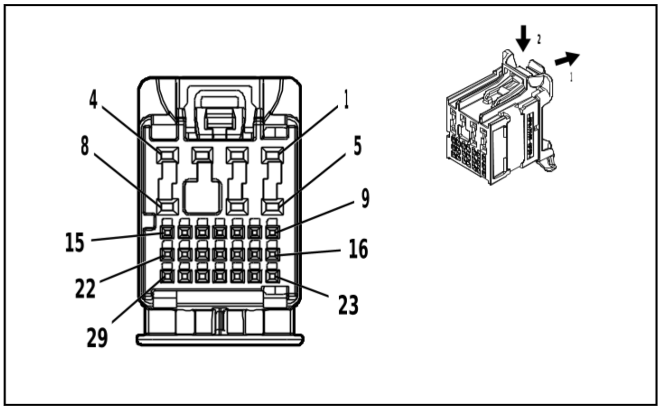
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(XM +/-HD) Coaxial Antenna XM Signal	I	—

A11 Radio X2



4578560

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(DK-GY with GY Inner Connector)

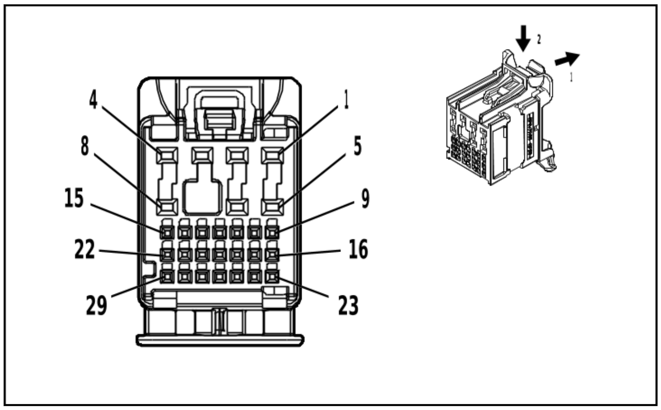
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

A11 Radio X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN	(1) 199	(1) Left Rear Speaker [+] Control	(1) II	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) YE / BK	(3) 117	(3) Right Front Speaker [-] Control 1	(3) II	(3) —
(4) 4	(4) 0.75	(4) BU / BK	(4) 115	(4) Right Rear Speaker [-] Control	(4) II	(4) —
(5) 5	(5) 0.75	(5) BN / BU	(5) 118	(5) Left Front Speaker [-] Control 1	(5) II	(5) —
(6) 6	(6) 0.75	(6) YE	(6) 200	(6) Right Front Speaker 1 [+] Control	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) WH	(8) 46	(8) Right Rear Speaker [+] Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) BU / WH	(9) 4985	(9) AUTOSAR CAN Bus [+] 5 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / YE	(10) 4984	(10) AUTOSAR CAN Bus [-] 5 Serial Data	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) GN / WH	(13) 24	(13) Backup Lamp Control	(13) I	(13) —
14 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) GN / GY	(18) 10652	(18) Radio LIN Bus 1	(18) I	(18) —
19 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.35	(22) GY / YE	(22) 3885	(22) Forward Collision Alert LED Control	(22) I	(22) —
(23) 23	(23) 0.35	(23) GY / BK	(23) 4787	(23) Day Night LED Control	(23) I	(23) —
24 - 29	—	—	—	Not Occupied	—	—

A11 Radio X3



4496253

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BK with GY Inner Connector)

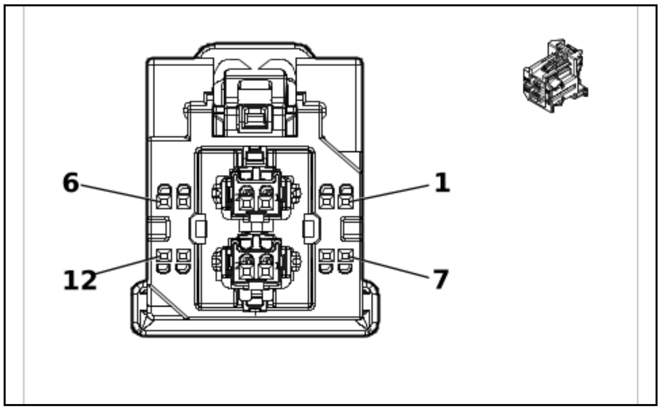
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

A11 Radio X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75 (1) 0.75	(1) RD / WH (1) RD / BN	(1) 2040 (1) 2240	(1) Battery Positive Voltage (1) Battery Positive Voltage	(1) II (1) II	(1) UQA (1) - UQA
(2) 2	(2) 0.75	(2) RD / BN	(2) 2240	(2) Battery Positive Voltage	(2) II	(2) —
(3) 3	(3) 0.75	(3) BK / WH	(3) 2151	(3) Signal Ground	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.75	(6) BK / WH	(6) 2151	(6) Signal Ground	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GN / BK	(8) 116	(8) Left Rear Speaker [-] Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) GY / YE	(9) 5149	(9) Voice Recognition Audio Signal	(9) I	(9) —
(10) 10	(10) 0.35	(10) BK / GY	(10) 5152	(10) Voice Recognition Audio [-] Control	(10) I	(10) —
(11) 11	(11) 0.35	(11) VT / YE	(11) 7043	(11) Microphone [+] Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) BU / BK	(12) 7044	(12) Microphone [-] Signal	(12) I	(12) —
13 - 29	—	—	—	Not Occupied	—	—

A11 Radio X4



5902882

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35552567
- Service Connector: 86555356
- Description: 12-Way F 0.5 CTS, AMEC High Speed Data Series(BK)

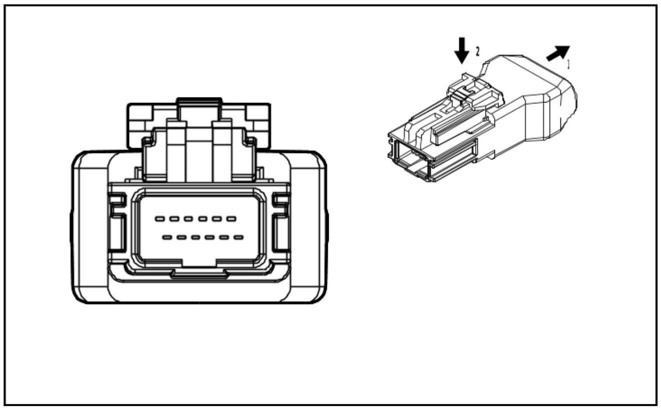
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	EL-38125-58

A11 Radio X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BU / WH	(1) 4758	(1) Ethernet Bus 2 [+]	(1) I	(1) —
(2) 2	(2) 0	(2) BU	(2) 4757	(2) Ethernet Bus 2 [-]	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.1	(5) WH	(5) 8580	(5) Automotive Audio Bus A2B Serial Data 1 [+]	(5) I	(5) —
(6) 6	(6) 0.1	(6) GN	(6) 8579	(6) Automotive Audio Bus A2B Serial Data 1 [-]	(6) I	(6) —
7 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.1	(9) GN	(9) 7210	(9) Ethernet Bus 4 [-]	(9) I	(9) —
(10) 10	(10) 0.1	(10) WH	(10) 7211	(10) Ethernet Bus 4 [+]	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

A11 Radio X5



4584321

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551162
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series(GY)

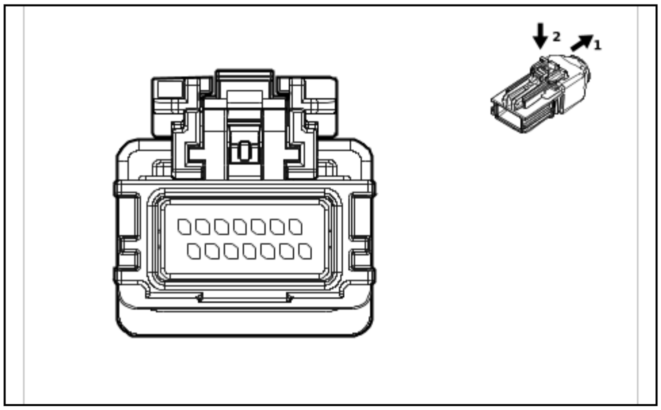
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) —	(2) —	(2) LVDS	(2) Low Voltage Differential Signaling Cable	(2) I	(2) —
3 - 12	—	—	—	Not Occupied	—	—
GY	—	—	LVDS	Low Voltage Differential Signaling Cable	I	—

A11 Radio X7



6002723

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 13535353
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 14-Way M 2.0 HSAL-2 Series(BK)

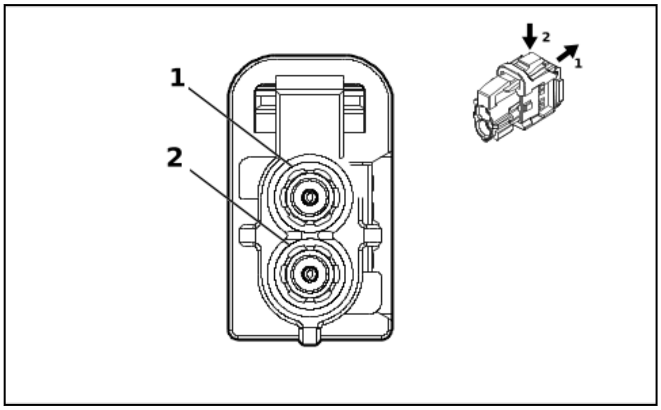
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X7

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

A11 Radio X8 (UXA)



6154796

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13544814
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Mini Coax Type(BU)

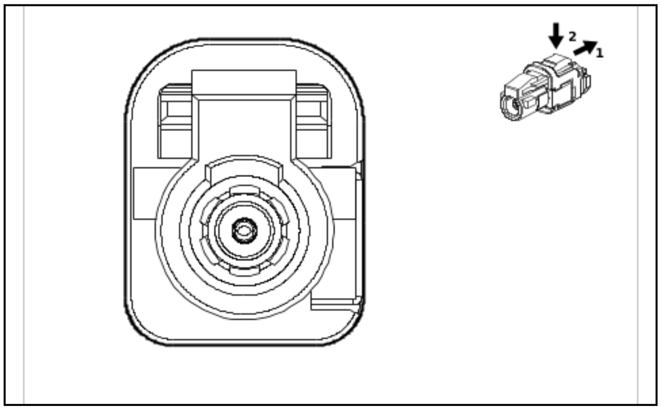
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X8 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Video Processing Module Coaxial Video Signal	I	—

A11 Radio X9



5926227

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13544788
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Mini Coax Type(BK)

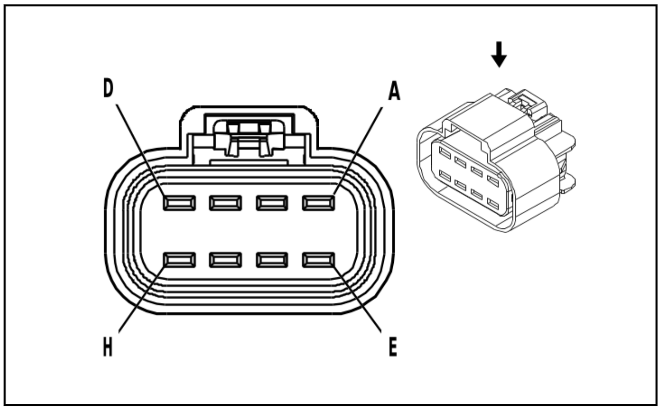
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X9

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	WiFi Antenna Coaxial Signal	I	—

A16 Transfer Case Four Wheel Drive Actuator (NP0 / NPH)



646372

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 13538370
- Service Connector: 19369184
- Description: 8-Way F 280 GT Series, Sealed(BK)

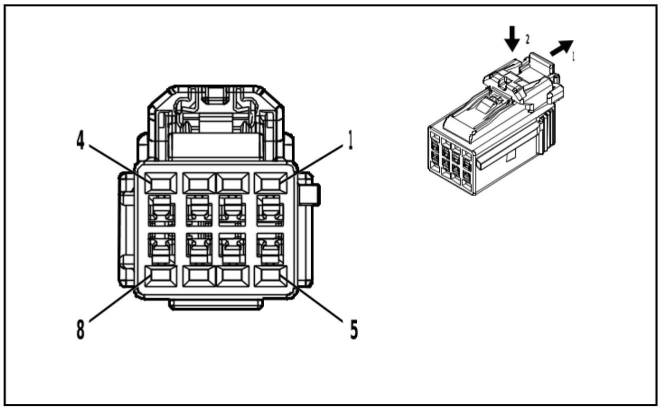
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

A16 Transfer Case Four Wheel Drive Actuator (NP0 / NPH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	YE / GY	1552	Transfer Case Motor Clockwise Control	I	—
B	0.75	BU	8013	Transfer Case Lock Solenoid Control 2	I	—
C	0.75	YE / BN	1569	Transfer Case Lock Solenoid Valve Control	I	—
D	2.5	YE / VT	1553	Transfer Case Motor Counter Clockwise Control	I	—
E	0.5	YE	7474	Incremental Encoder Direction Signal	I	—
F	0.5	BU / GY	7473	Incremental Encoder Impulse Signal	I	—
G	0.5	WH / GN	7475	Incremental Encoder Sensor Voltage Reference	I	—
H	0.5	VT	7476	Incremental Encoder Sensor Low Reference	I	—

A22 Radio Control X1



5086387

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series(BK)

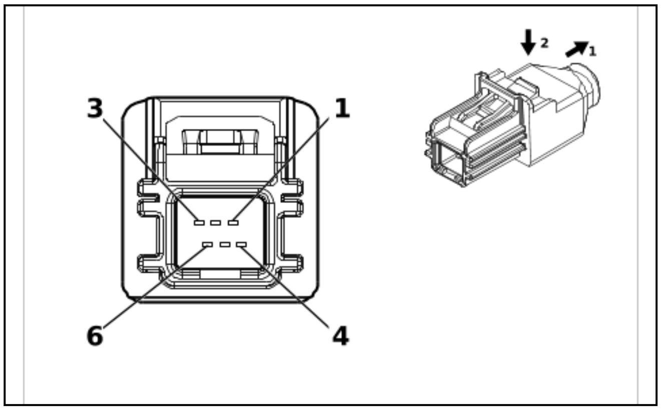
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

A22 Radio Control X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 1440	(1) Battery Positive Voltage	(1) I	(1) —
2 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK / WH	(8) 2151	(8) Signal Ground	(8) I	(8) —

A22 Radio Control X2



5278781

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551198
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(GY)

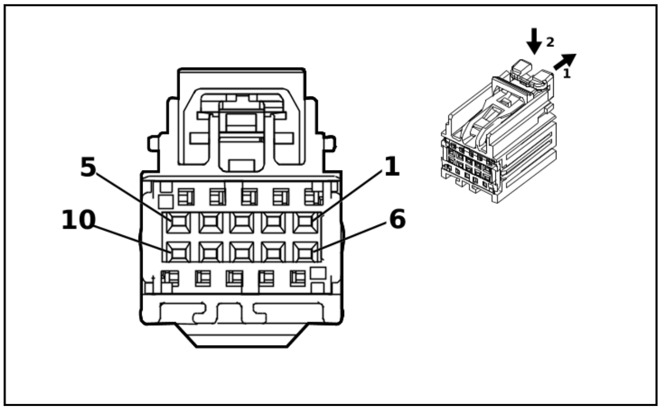
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A22 Radio Control X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 6	—	—	—	Not Occupied	—	—
BK	—	—	LVDS	Low Voltage Differential Signaling Cable	I	—

A23LR Rear Side Door Latch - Left



4622549

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

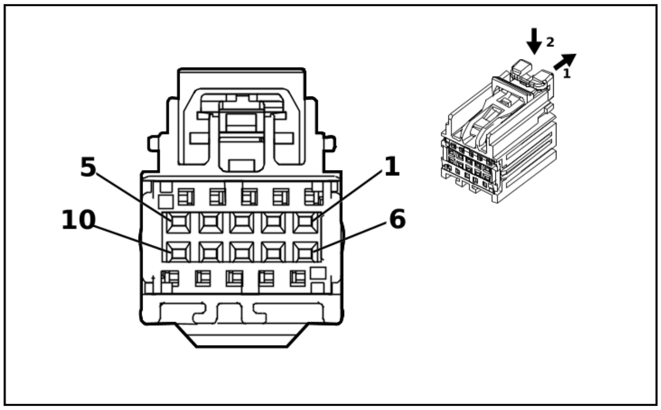
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A23LR Rear Side Door Latch - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) GY	(1) 747	(1) Left Rear Door Ajar Switch Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) BK	(3) 1150	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0	(7) BU / YE	(7) 1091	(7) Left Rear Door Lock Actuator Lock Control	(7) I	(7) —
(8) 8	(8) 0	(8) WH	(8) 2679	(8) Lock Actuators Unlock Control 1	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—

A23P Front Side Door Latch - Passenger



4622549

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

Terminal Part Information

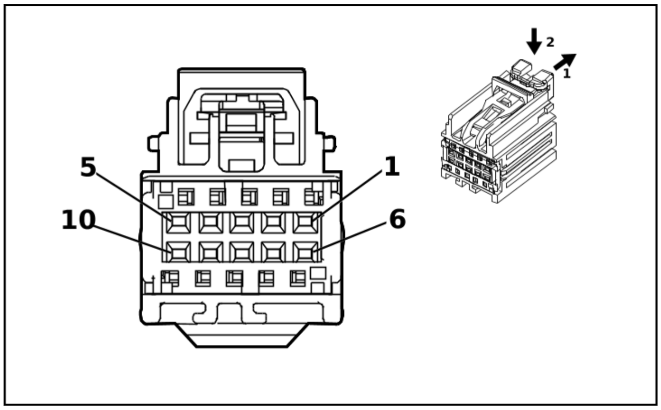
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A23P Front Side Door Latch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) VT	(2) 4259	(2) Right Front Door Lock Status Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1250	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(5) 5	(5) 0.35	(5) GY	(5) 746	(5) Right Front Door Ajar Switch Signal	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GY / BK	(8) 2680	(8) Lock Actuators Unlock Control 2	(8) I	(8) —
(9) 9	(9) 0.75	(9) YE / GN	(9) 2682	(9) Right Front Door Lock Actuator Lock Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—

A23RR Rear Side Door Latch - Right



4622549

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

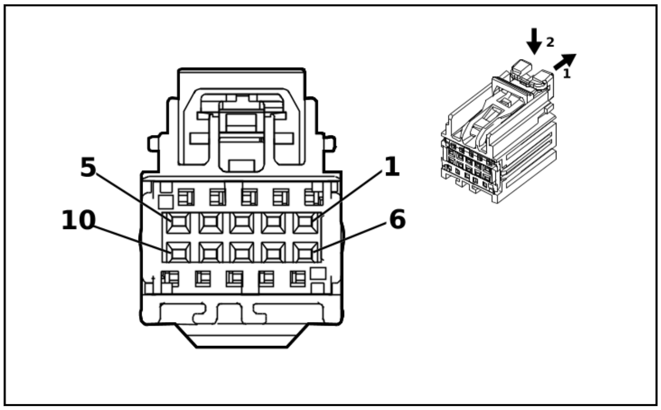
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A23RR Rear Side Door Latch - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) BK	(3) 1250	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0	(5) GY	(5) 748	(5) Right Rear Door Ajar Switch Signal	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0	(8) GY / BK	(8) 2680	(8) Lock Actuators Unlock Control 2	(8) I	(8) —
(9) 9	(9) 0	(9) VT / WH	(9) 1094	(9) Right Rear Door Lock Actuator Lock Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—

A23SL Front Side Door Latch Striker - Left



4622549

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

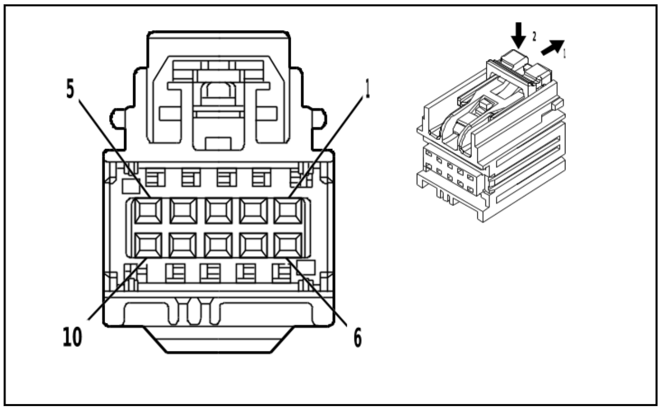
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A23SL Front Side Door Latch Striker - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) GY	(1) 745	(1) Left Front Door Ajar Switch Signal	(1) I	(1) —
(2) 2	(2) 0	(2) VT / GY	(2) 126	(2) Left Front Door Open Switch Signal	(2) I	(2) —
(3) 3	(3) 0	(3) BK	(3) 1150	(3) Ground	(3) I	(3) —
(4) 4	(4) 0	(4) WH / VT	(4) 4258	(4) Left Front Door Lock Status Signal	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0	(7) GY	(7) 2681	(7) Left Front Door Lock Actuator Lock Control	(7) I	(7) —
(8) 8	(8) 0	(8) WH	(8) 2679	(8) Lock Actuators Unlock Control 1	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—

A26 Heater and Air Conditioning User Interface Control - Front



4891168

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-4885
- Service Connector: 13509649
- Description: 10-Way F 0.64 Kaizen Series(NA)

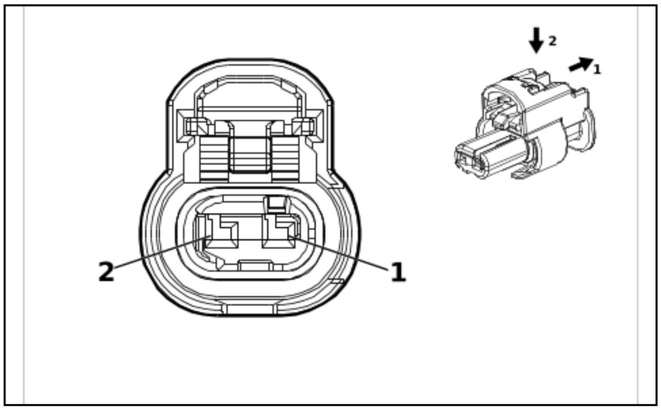
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300629	J-35616-64B (L-BU)	J-38125-215A

A26 Heater and Air Conditioning User Interface Control - Front

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 1440	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BU / WH	(3) 4985	(3) AUTOSAR CAN Bus [+] 5 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / WH	(4) 4985	(4) AUTOSAR CAN Bus [+] 5 Serial Data	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GY / GN	(6) 4636	(6) HVAC System Enable Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) AUTOSAR CAN Bus [-] 5 Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) BU / YE	(9) 4984	(9) AUTOSAR CAN Bus [-] 5 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BK / WH	(10) 2151	(10) Signal Ground	(10) I	(10) —

A99 Pickup Box Endgate Latch



4649903

Connector Part Information
- Harness Type: Liftgate Jumper Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

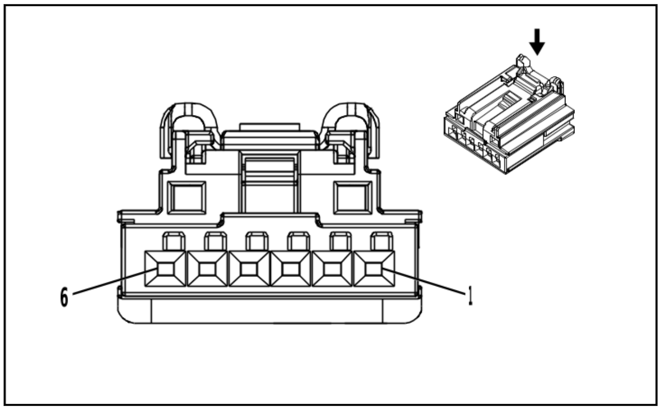
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

A99 Pickup Box Endgate Latch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2691	(1) Rear Closure Actuator Lock Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BK	(2) 2680	(2) Lock Actuators Unlock Control 2	(2) I	(2) —

A103 Roof Console (DD8)



4145138

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 2035363-2
- Service Connector: 19356359
- Description: 6-Way F 0.64 Generation Y Series(BK)

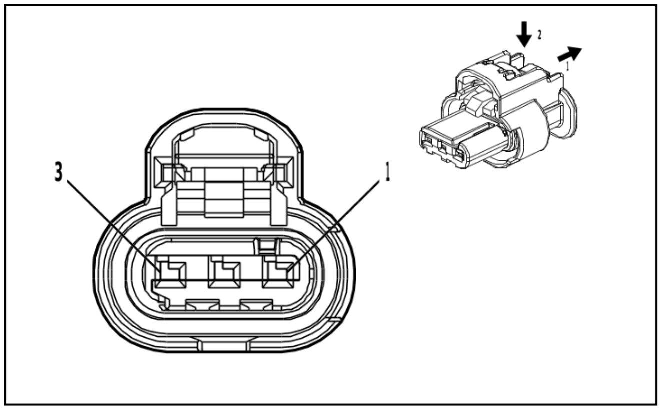
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

A103 Roof Console (DD8)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) WH / BN	(2) 6815	(2) Inadvertent Load Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GY	(3) 157	(3) Interior Lamp Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK	(4) 4250	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY	(5) 156	(5) Courtesy Lamp Switch Signal	(5) I	(5) —
(6) 6	(6) 0.35	(6) GY / GN	(6) 328	(6) Interior Lamp Defeat Switch Signal	(6) I	(6) —

B1 Air Conditioning Refrigerant Pressure Sensor



4581126

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

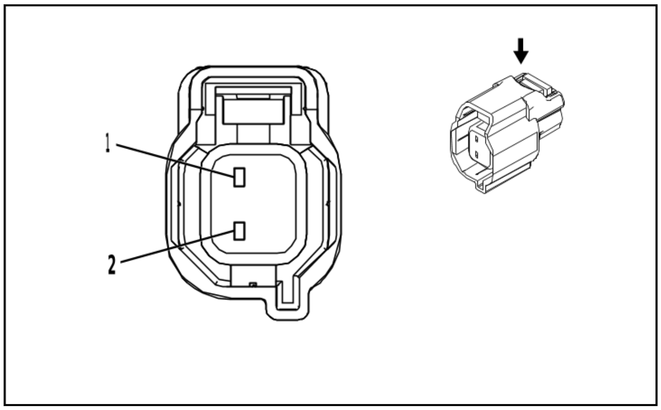
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B1 Air Conditioning Refrigerant Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 380	(2) Air Conditioning Refrigerant Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 626	(3) Engine Control Vehicle Sensors Low Reference 1	(3) I	(3) —

B5LF Front Wheel Speed Sensor - Left



2900396

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0026
- Service Connector: 19366856
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

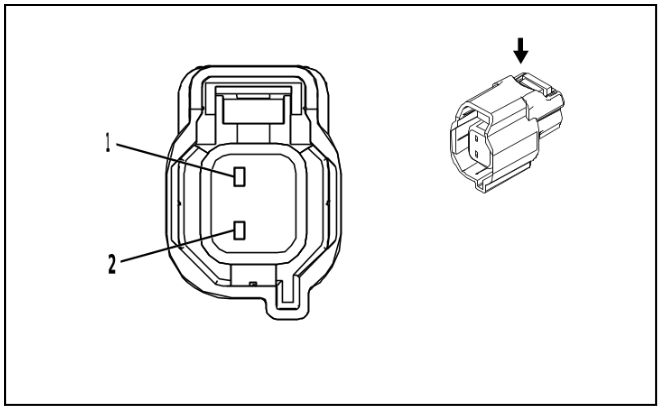
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5LF Front Wheel Speed Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 7064	(1) Left Front Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 830	(2) Left Front Wheel Speed Sensor Signal	(2) I	(2) —

B5LR Rear Wheel Speed Sensor - Left



2900396

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0026
- Service Connector: 19366856
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

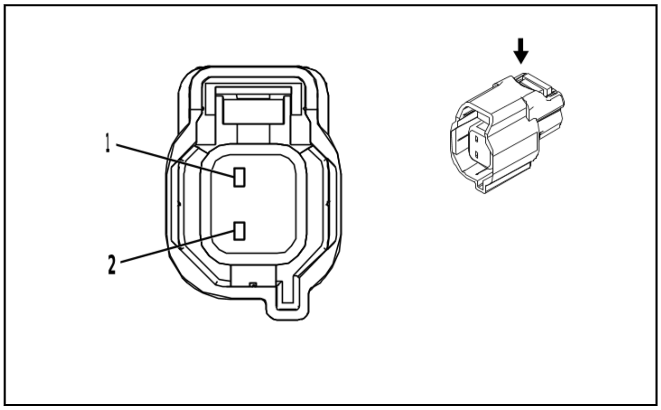
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5LR Rear Wheel Speed Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BK	(1) 7127	(1) Left Rear Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 884	(2) Left Rear Wheel Speed Sensor Signal	(2) I	(2) —

B5RF Front Wheel Speed Sensor - Right



2900396

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0026
- Service Connector: 19366856
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

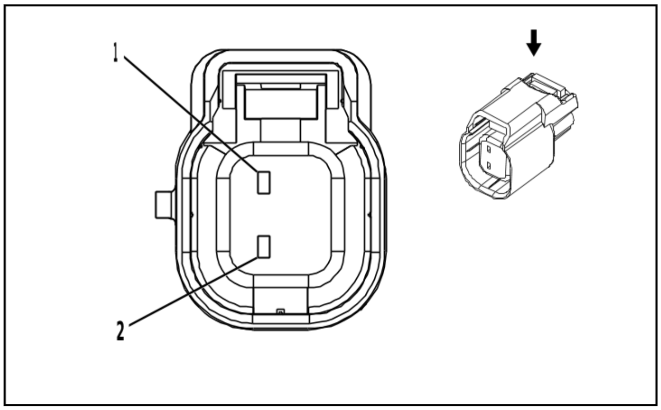
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5RF Front Wheel Speed Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 7065	(1) Right Front Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 872	(2) Right Front Wheel Speed Sensor Signal	(2) I	(2) —

B5RR Rear Wheel Speed Sensor - Right



4115616

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0046
- Service Connector: 19366860
- Description: 2-Way F 1.5 Series, Sealed(BK)

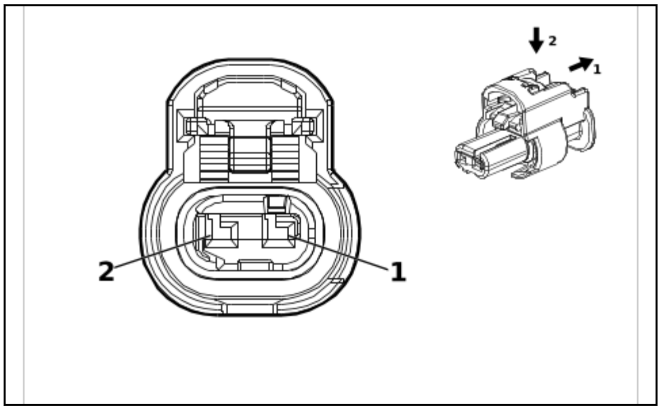
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5RR Rear Wheel Speed Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / YE	(1) 7128	(1) Right Rear Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT	(2) 882	(2) Right Rear Wheel Speed Sensor Signal	(2) I	(2) —

B9 Ambient Air Temperature Sensor



4649903

Connector Part Information

- Harness Type: Radiator Shutter Wiring HarnessRadiator Shutter Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

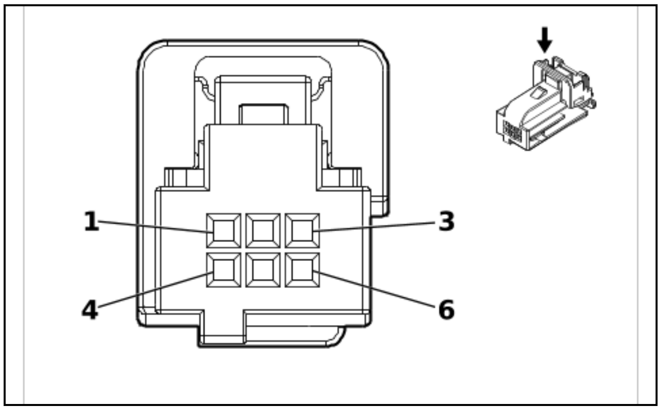
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B9 Ambient Air Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / GY	(1) 636	(1) Ambient Air Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B10D Sun Load and Ambient Light and Security Indicator Sensor



2282896

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294663-1
- Service Connector: 85587649
- Description: 6-Way F 0.64 Micro-Quadlock Series(BK)

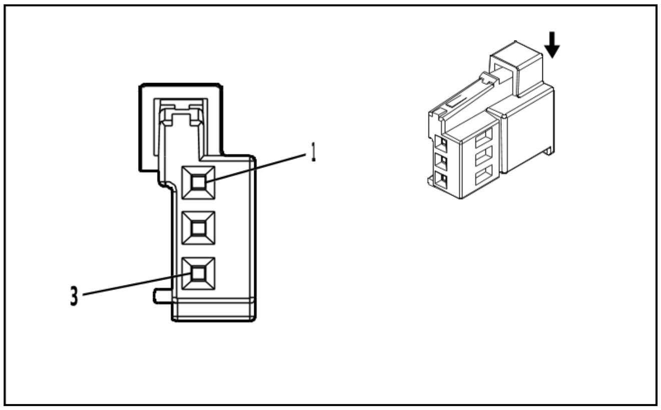
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B10D Sun Load and Ambient Light and Security Indicator Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY	(1) 590	(1) Driver Solar Sensor Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) WH / BU	(3) 278	(3) Ambient Light Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / WH	(4) 734	(4) Inside Air Temperature Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY	(5) 728	(5) Security Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BK / YE	(6) 407	(6) Sensor Low Reference	(6) I	(6) —

B12B Automatic Transmission Fluid Pressure Sensor



4829276

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 13511013
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Series(BU)

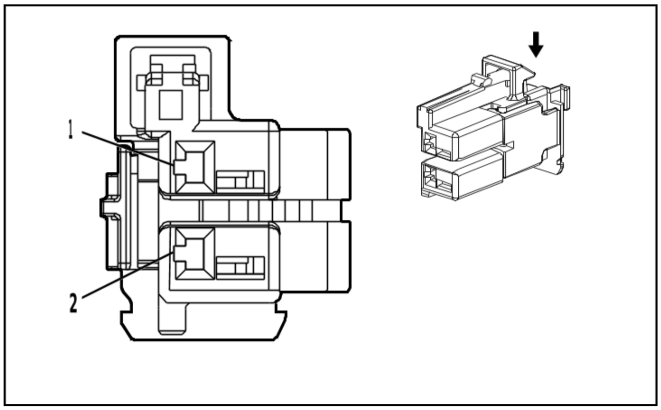
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B12B Automatic Transmission Fluid Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / RD	(1) 10817	(1) Lubricant Circuit Pressure Sensor 5 Volt Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / BK	(2) 10819	(2) Lubricant Circuit Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 10816	(3) Lubricant Circuit Pressure Sensor Signal	(3) I	(3) —

B13 Automatic Transmission Fluid Temperature Sensor



4672650

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 312004A
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

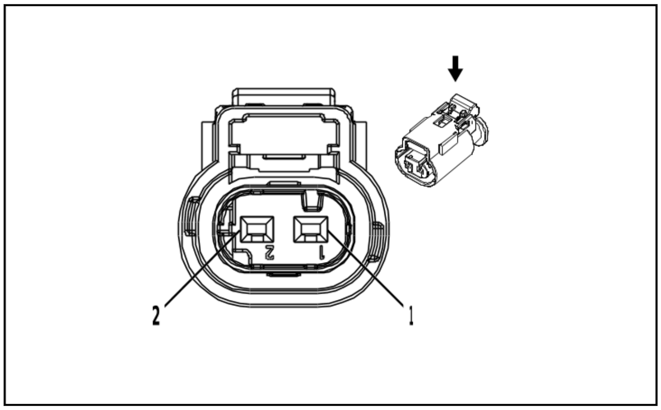
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B13 Automatic Transmission Fluid Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / BN	(1) 586	(1) Transmission Fluid Temperature Sensor Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BN	(2) 585	(2) Transmission Fluid Temperature Sensor Signal	(2) I	(2) —

B20A Brake Fluid Level Indicator Switch



2717066

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

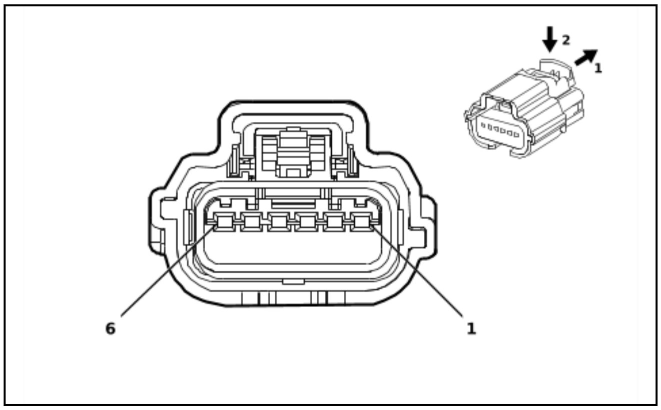
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B20A Brake Fluid Level Indicator Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 333	(1) Brake Fluid Level Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 2251	(2) Signal Ground	(2) I	(2) —

B22 Brake Pedal Position Sensor



4773396

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 31404-7810
- Service Connector: 84683650
- Description: 6-Way F 64 Series, Sealed(NA)

Terminal Part Information

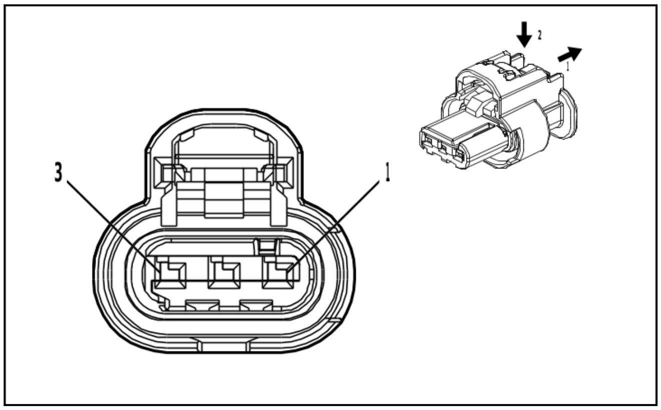
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B22 Brake Pedal Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / BN	(1) 5360	(1) Brake Apply Sensor Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 5359	(2) Brake Apply Sensor Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / YE	(3) 5361	(3) Brake Apply Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / GN	(4) 5380	(4) Brake Position Sensor Signal	(4) I	(4) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) BK / GY	(5) 626	(5) Engine Control Vehicle Sensors Low Reference 1	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / RD	(6) 480	(6) Engine Control Vehicle Sensors 5 Volt Reference 1	(6) I	(6) —

B23E Camshaft Position Sensor - Exhaust



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

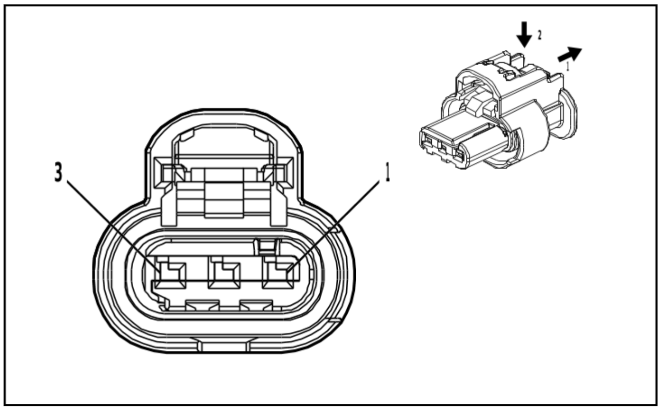
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B23E Camshaft Position Sensor - Exhaust

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / YE	(1) 5297	(1) Exhaust Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 5296	(2) Exhaust Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BK	(3) 5273	(3) Exhaust Camshaft Position Sensor 1	(3) I	(3) —

B23F Camshaft Position Sensor - Intake



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

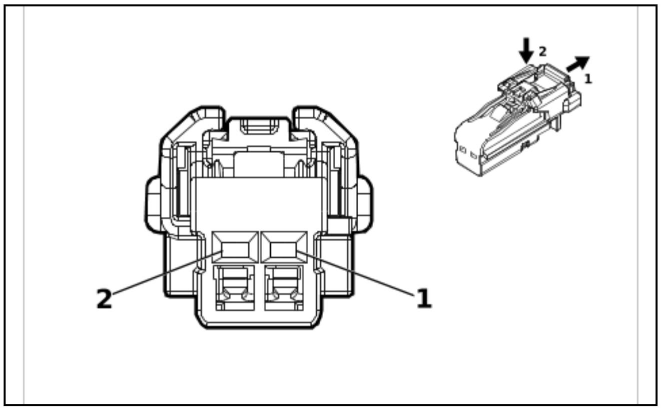
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B23F Camshaft Position Sensor - Intake

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5300	(1) Intake Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 5301	(2) Intake Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 5275	(3) Intake Camshaft Position Sensor 1	(3) I	(3) —

B24 Mobile Telephone Microphone



4115691

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

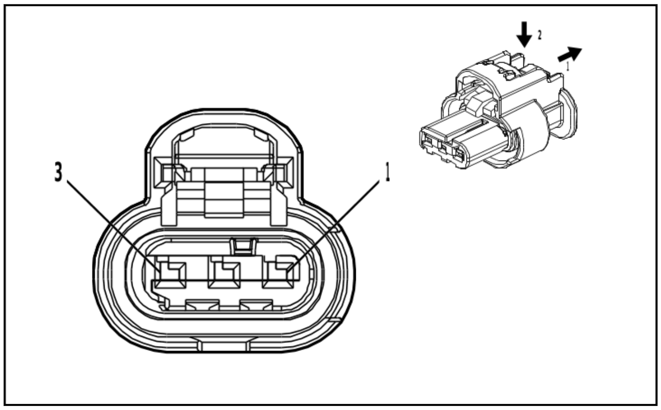
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B24 Mobile Telephone Microphone

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / BN	(1) 654	(1) Cellular Telephone Microphone Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 655	(2) Cellular Telephone Microphone Signal	(2) I	(2) —

B26 Crankshaft Position Sensor



4778903

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

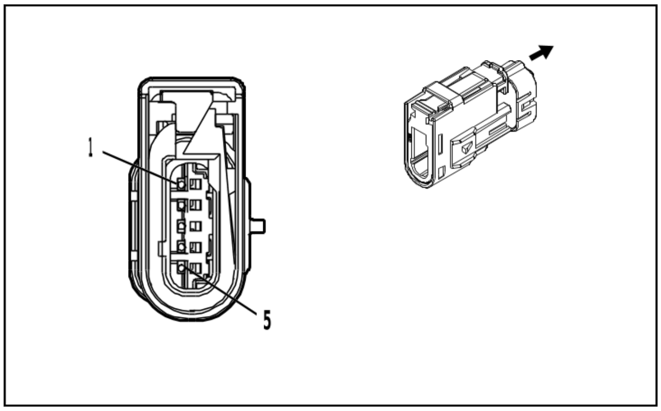
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B26 Crankshaft Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 6270	(1) Crankshaft Position Sensor Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6272	(2) Crankshaft Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN	(3) 6271	(3) Crankshaft Position Sensor Signal	(3) I	(3) —

B27LF Front Side Door Outside Handle Switch - Left



4808321

Connector Part Information
- Harness Type: Front Side Door Outside Handle Switch - Left
- OEM Connector: SRVWSB-04A-BS
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

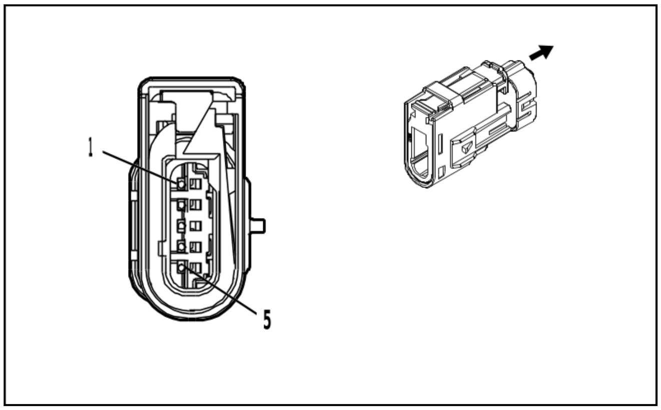
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B27LF Front Side Door Outside Handle Switch - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BU	(1) 2675	(1) Left Front Exterior Door Handle Switch Unlock Signal	(1) I	(1) —
2 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0	(5) BK	(5) 1150	(5) Ground	(5) I	(5) —

B27RF Front Side Door Outside Handle Switch - Right



4808321

Connector Part Information

- Harness Type: Front Side Door Outside Handle Switch - Right
- OEM Connector: SRVWSB-04A-BS
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

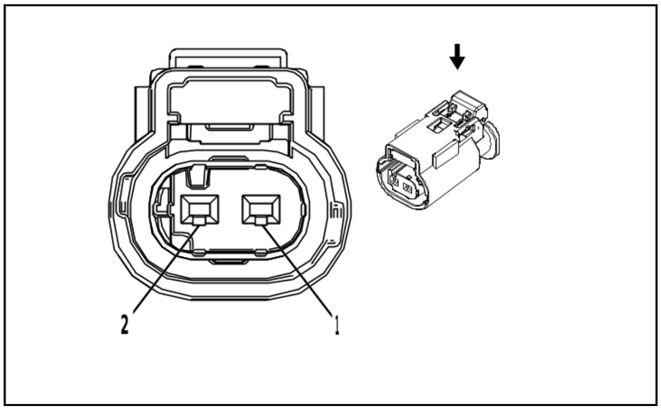
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B27RF Front Side Door Outside Handle Switch - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / VT	(1) 2676	(1) Right Front Door Exterior Switch Unlock Signal	(1) I	(1) —
2 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BK	(5) 2250	(5) Ground	(5) I	(5) —

B34A Engine Coolant Temperature Sensor 1



2830969

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

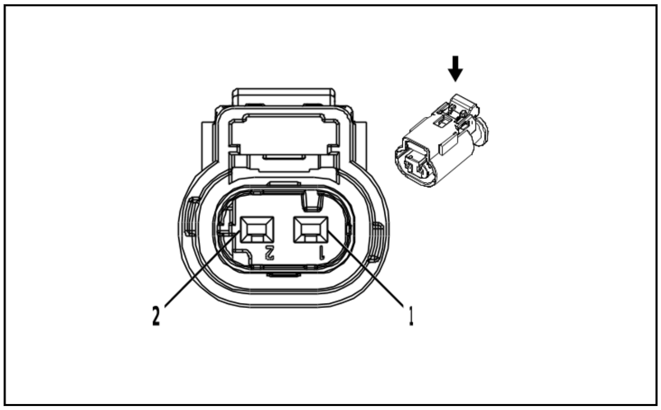
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34A Engine Coolant Temperature Sensor 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT	(1) 2988	(1) Engine Outlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B34B Engine Coolant Temperature Sensor 2



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

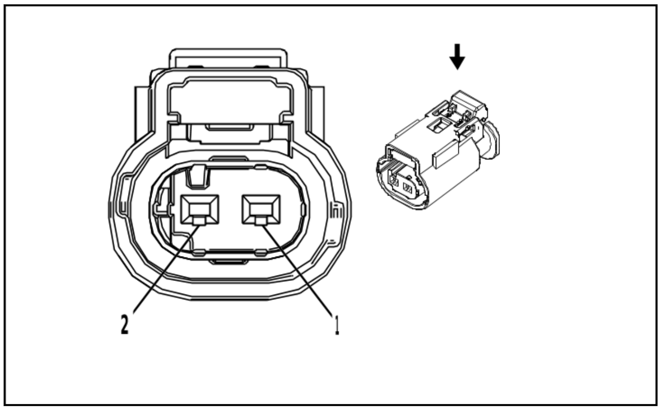
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34B Engine Coolant Temperature Sensor 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BU	(1) 2408	(1) Engine Inlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B34E Engine Coolant Temperature Sensor 5



2830969

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

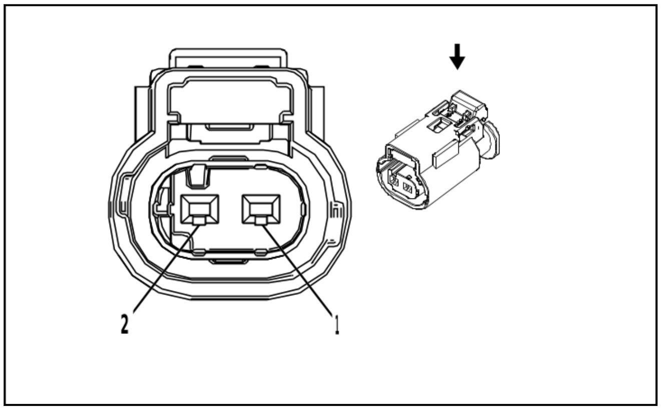
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34E Engine Coolant Temperature Sensor 5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 8938	(1) Engine Integrated Exhaust Manifold Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B34F Engine Coolant Temperature Sensor 6



2830969

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

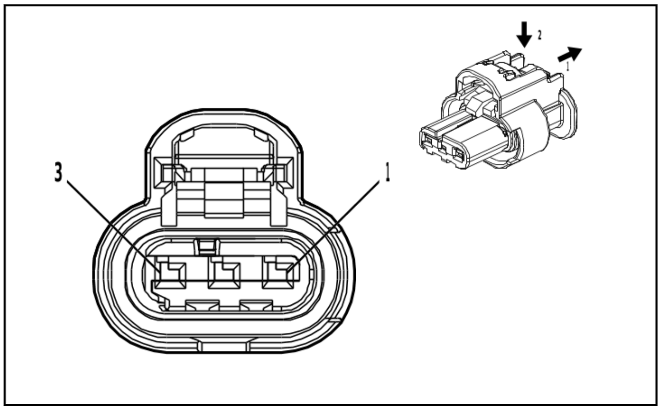
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34F Engine Coolant Temperature Sensor 6

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2404	(1) Engine Block Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B36 Engine Oil Temperature Sensor



4994602

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

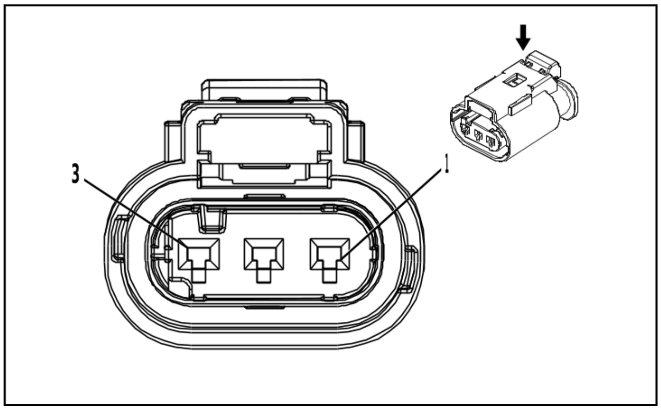
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B36 Engine Oil Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GY	(1) 626	(1) Engine Control Vehicle Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / BU	(2) 357	(2) Oil Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT	(3) 7485	(3) Engine Oil Temperature Sensor 2 Signal	(3) I	(3) —

B37B Engine Oil Pressure Sensor



3240107

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010344
- Service Connector: 19301717
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

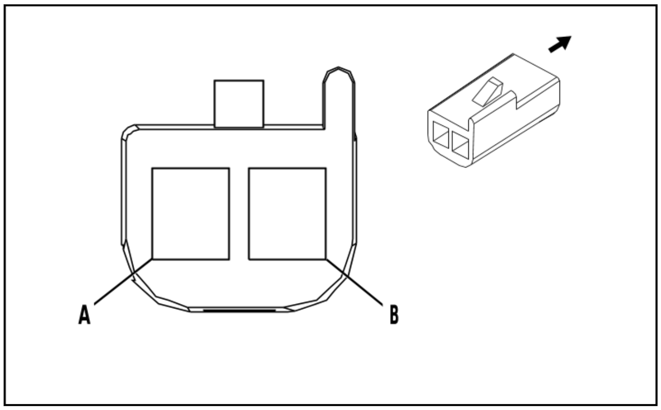
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B37B Engine Oil Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 331	(1) Oil Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B39 Air Conditioning Evaporator Air Temperature Sensor



82383

Connector Part Information
- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 12059247
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 150 Metri-Pack Series(GY)

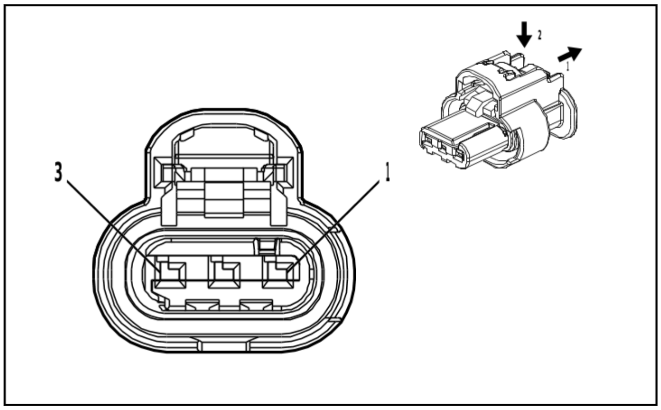
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

B39 Air Conditioning Evaporator Air Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	0.35	BK / YE	407	Sensor Low Reference	I	—
B	0.35	GY	6137	Air Conditioning Evaporator Temperature Sensor Signal	I	—

B47 Fuel Pressure Sensor



4581126

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

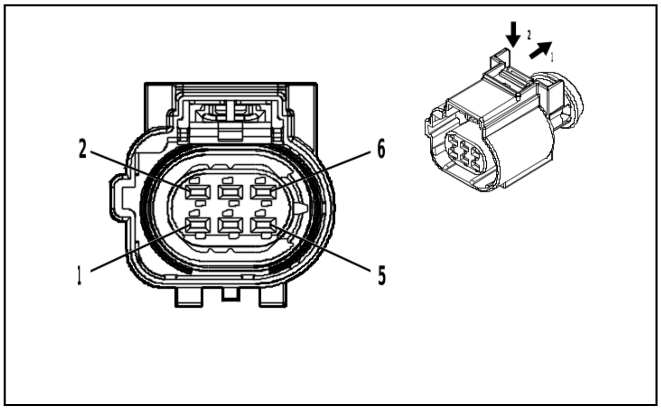
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B47 Fuel Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 7445	(1) Fuel Line Pressure Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 7447	(2) Fuel Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 7446	(3) Fuel Pressure Sensor Signal	(3) I	(3) —

B52A Heated Oxygen Sensor 1



5086832

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-8
- Service Connector: 84613131
- Description: 6-Way F 1.5 MCP Series, Sealed(GY)

Terminal Part Information

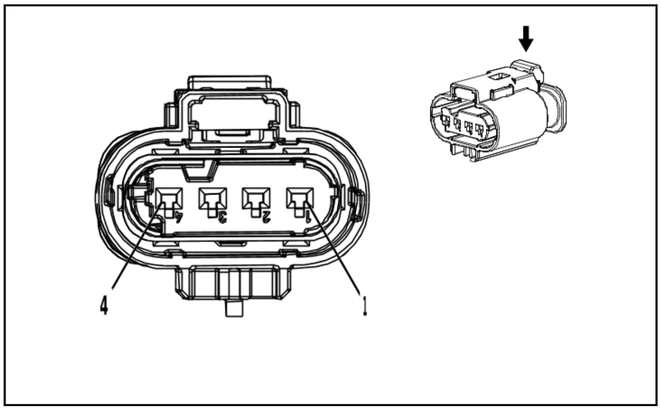
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B52A Heated Oxygen Sensor 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 6933	(1) HO2S Pump Current Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 6934	(2) HO2S Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / WH	(3) 3113	(3) HO2S Heater Low Control Bank 1 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 5293	(4) Powertrain Main Relay Fused Supply Voltage 4	(4) I	(4) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) GN	(5) 6935	(5) HO2S Pump Current Trim Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 6936	(6) HO2S Signal	(6) I	(6) —

B52B Heated Oxygen Sensor 2



4036496

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10021265
- Service Connector: 19330904
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

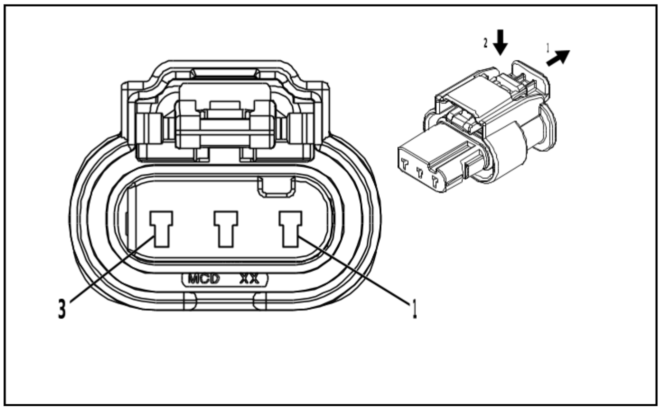
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B52B Heated Oxygen Sensor 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 3122	(1) HO2S Heater Low Control Bank 1 Sensor 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5294	(2) Powertrain Main Relay Fused Supply Voltage 5	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / WH	(3) 3113	(3) HO2S Heater Low Control Bank 1 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN	(4) 3120	(4) HO2S High Signal Bank 1 Sensor 2	(4) I	(4) —

B55 Engine Compartment Cover Switch



4421568

Connector Part Information
- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 34900-3120
- Service Connector: 19368220
- Description: 3-Way F 1.2 MCON-LL Series, Sealed(BK)

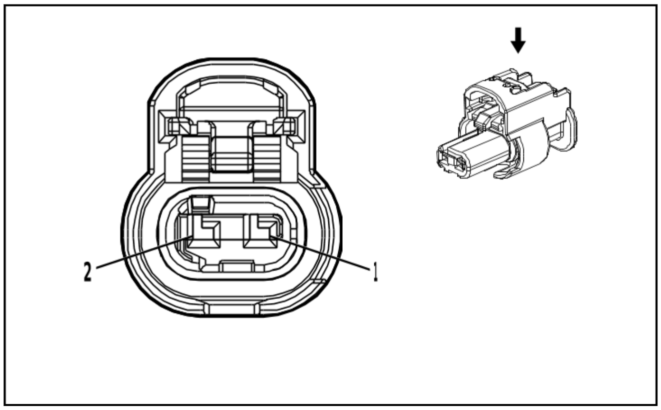
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B55 Engine Compartment Cover Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 4063	(1) Hood Status A Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4064	(2) Hood Status B Signal	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 2250	(3) Ground	(3) I	(3) —

B58L Airbag Front End Discriminating Sensor - Left



4690744

Connector Part Information
- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

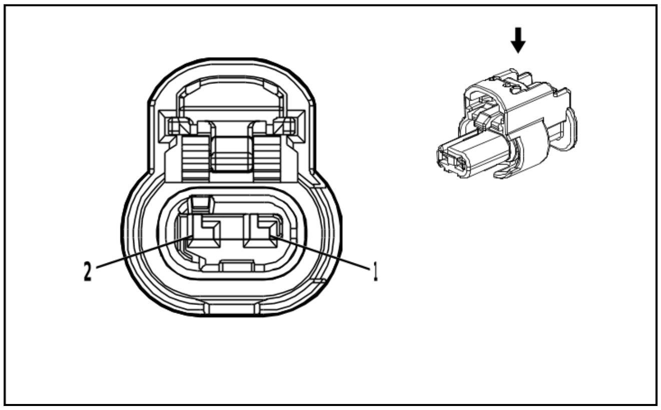
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B58L Airbag Front End Discriminating Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / YE	(1) 354	(1) Left Front Impact Discriminating Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 5045	(2) Left Front Impact Discriminating Sensor Low Reference	(2) I	(2) —

B58R Airbag Front End Discriminating Sensor - Right



4690744

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

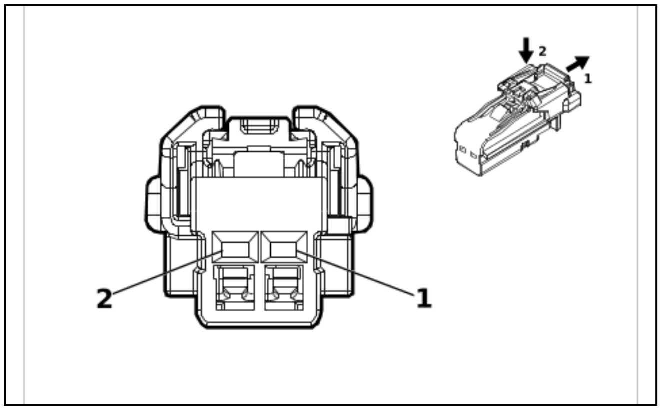
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B58R Airbag Front End Discriminating Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 1409	(1) Right Front Impact Discriminating Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 5600	(2) Right Front Impact Discriminating Sensor Low Reference	(2) I	(2) —

B61P Seat Belt Tension Sensor - Passenger



4115691

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

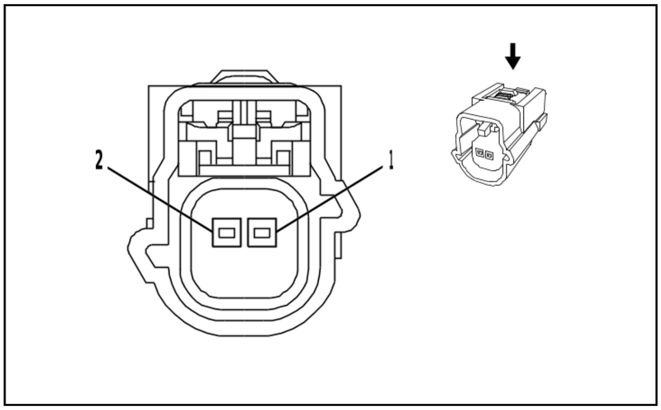
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B61P Seat Belt Tension Sensor - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / OG	(1) 3946	(1) Passenger Automatic Locking Retractor Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / BN	(2) 3947	(2) Passenger Automatic Locking Retractor Switch Signal	(2) I	(2) —

B63LF Airbag Side Impact Sensor - Left Front Door



2179777

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 54390242
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed(GY)

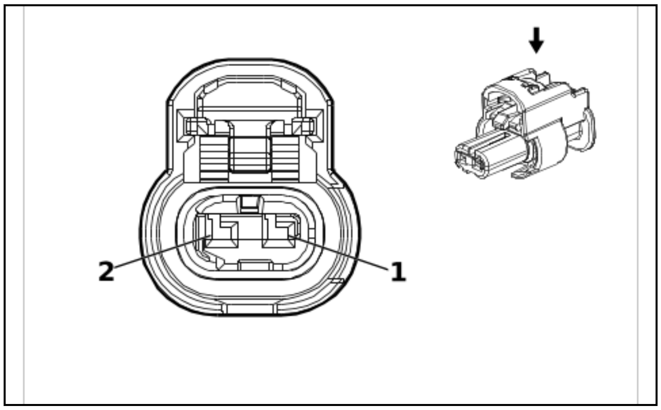
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B63LF Airbag Side Impact Sensor - Left Front Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) OG / GN	(1) 2132	(1) Left Front Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0	(2) BK / OG	(2) 6628	(2) Left Front Side Impact Sensor Low Reference	(2) I	(2) —

B63LRG Airbag Side Impact Rear Sensor - Left



4335931

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

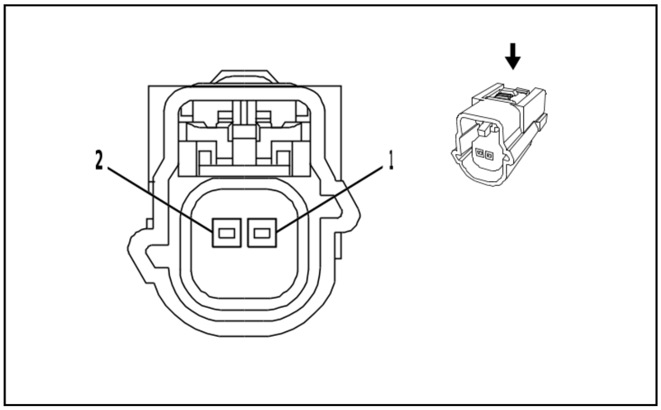
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B63LRG Airbag Side Impact Rear Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BU	(1) 6622	(1) Left Rear Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6623	(2) Left Rear Side Impact Sensor Low Reference	(2) I	(2) —

B63RF Airbag Side Impact Sensor - Right Front Door



2179777

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 54390242
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed(GY)

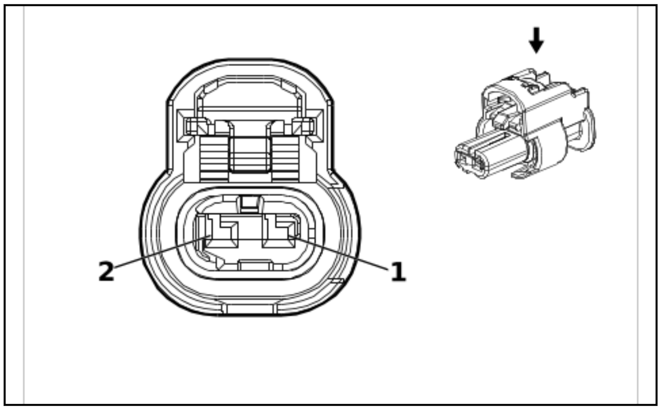
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B63RF Airbag Side Impact Sensor - Right Front Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BN / OG	(1) 2134	(1) Right Front Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0	(2) BK / OG	(2) 6629	(2) Right Front Side Impact Sensor Low Reference	(2) I	(2) —

B63RRG Airbag Side Impact Rear Sensor - Right



4335931

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

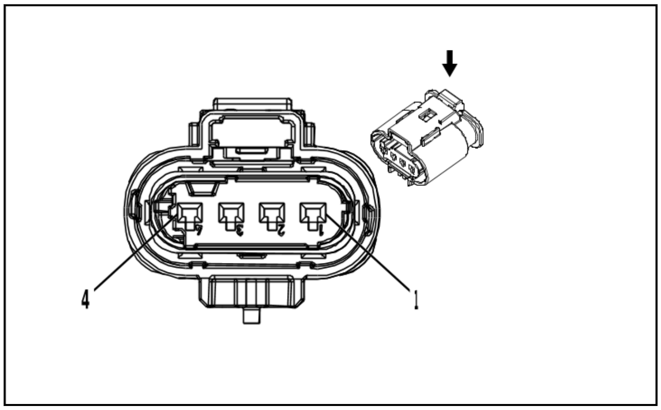
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B63RRG Airbag Side Impact Rear Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / WH	(1) 6626	(1) Right Rear Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6627	(2) Right Rear Side Impact Sensor Low Reference	(2) I	(2) —

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor



2717079

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010346
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

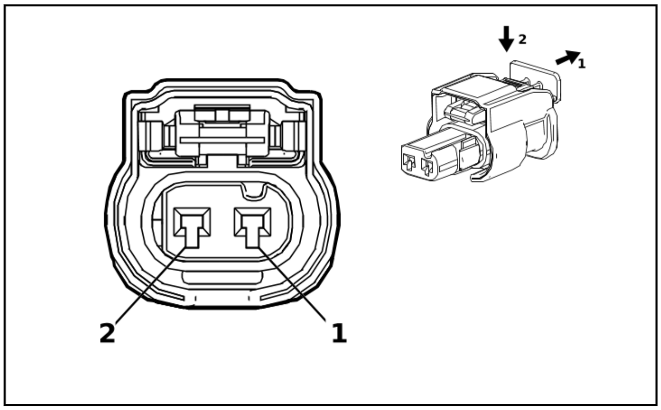
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 7329	(1) Pre-Throttle Air Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / RD	(2) 2704	(2) Manifold Absolute Pressure Sensor 5V Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 469	(3) Manifold Absolute Pressure Sensor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 432	(4) Manifold Absolute Pressure Sensor Signal	(4) I	(4) —

B68A Knock Sensor 1



3960139

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34900-2120
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

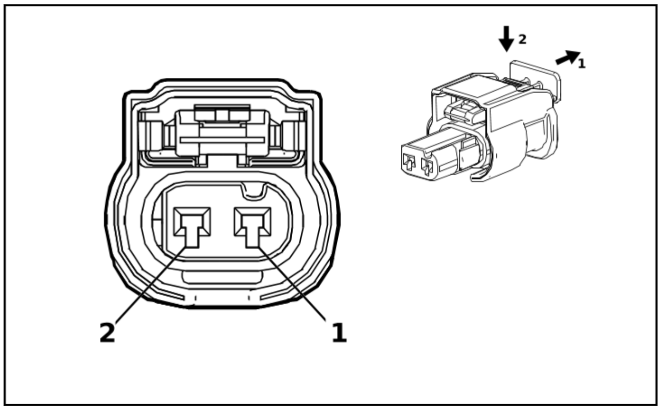
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B68A Knock Sensor 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 496	(1) Knock Sensor 1 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 1716	(2) Knock Sensor Low Reference 1	(2) I	(2) —

B68B Knock Sensor 2



3960139

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34900-2120
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

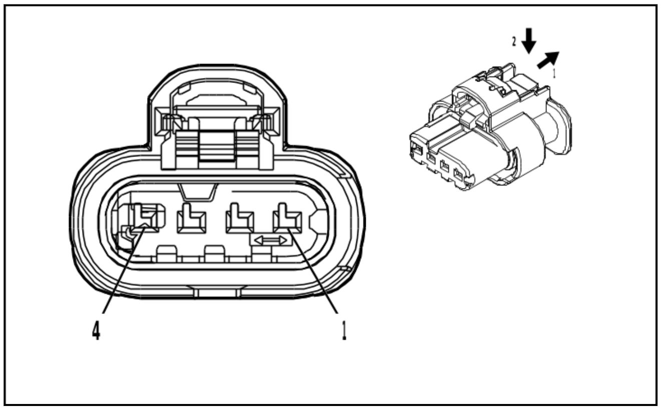
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B68B Knock Sensor 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / GY	(1) 1876	(1) Knock Sensor 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2303	(2) Knock Sensor Low Reference 2	(2) I	(2) —

B75 Mass Airflow Sensor



4934614

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

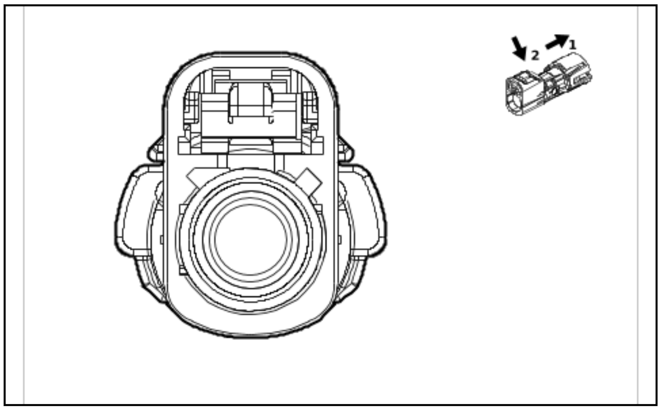
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B75 Mass Airflow Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5294	(1) Powertrain Main Relay Fused Supply Voltage 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 492	(2) Mass Air Flow Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / WH	(3) 4622	(3) Engine Control Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.75	(4) BK / WH	(4) 151	(4) Signal Ground	(4) I	(4) —

B87 Rearview Driver Information Camera (UV2)



5758030

Connector Part Information
- Harness Type: Liftgate Jumper Wiring Harness COAX
- OEM Connector: 13529782
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

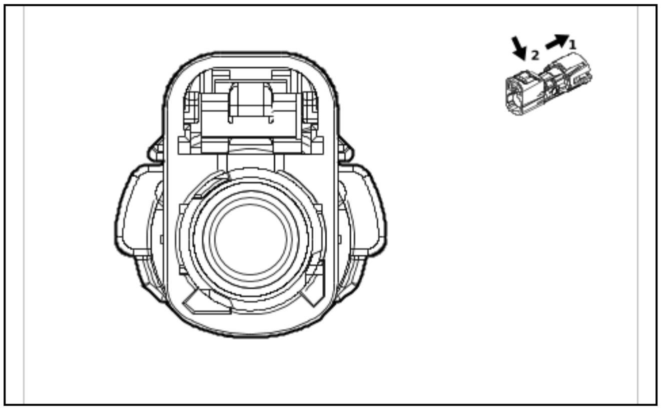
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B87 Rearview Driver Information Camera (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Rear Vision Camera Coaxial Video Signal	I	—

B87 Rearview Driver Information Camera (UVB)



5757455

Connector Part Information
- Harness Type: Liftgate Jumper Wiring Harness COAX
- OEM Connector: 13529793
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(OG)

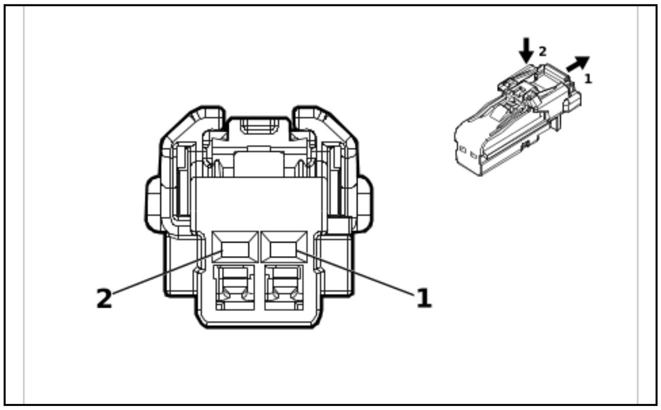
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B87 Rearview Driver Information Camera (UVB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Rear Vision Camera Coaxial Video Signal	I	—

B88D Seat Belt Switch - Driver



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

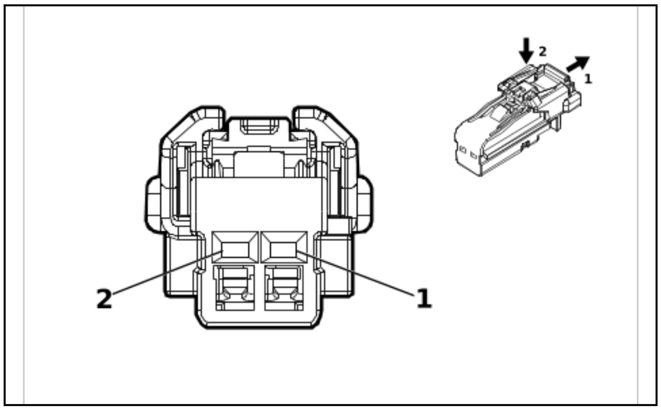
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B88D Seat Belt Switch - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / BN	(2) 238	(2) Driver Seat Belt Switch Signal	(2) I	(2) —

B88P Seat Belt Switch - Passenger



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

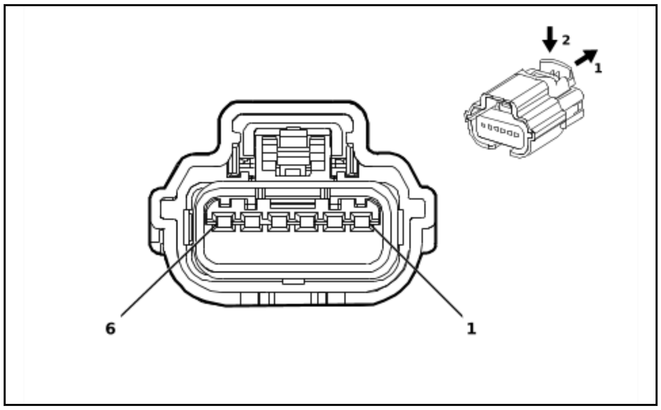
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B88P Seat Belt Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / VT	(2) 1362	(2) Passenger Seat Belt Switch Signal	(2) I	(2) —

B107 Accelerator Pedal Position Sensor



5157678

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 31404-7110
- Service Connector: 84773558
- Description: 6-Way F 64 Series, Sealed(BK)

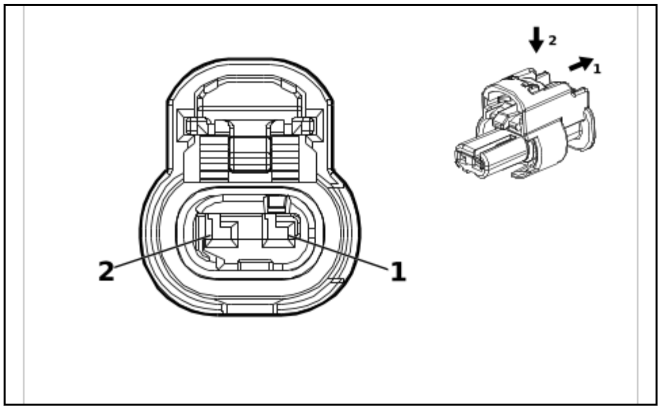
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B107 Accelerator Pedal Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 1274	(1) Accelerator Pedal Position 5V Reference 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 1162	(2) Accelerator Pedal Position Signal 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / VT	(3) 1272	(3) Accelerator Pedal Position Low Reference 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BU	(4) 1271	(4) Accelerator Pedal Position Low Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / WH	(5) 1161	(5) Accelerator Pedal Position Signal 1	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / RD	(6) 1164	(6) Accelerator Pedal Position 5V Reference 1	(6) I	(6) —

B110 Battery Monitor Module X1



4649903

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B110 Battery Monitor Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / YE	(1) 2855	(1) Body Control Module LIN Bus 9	(1) I	(1) —
(2) 2	(2) 0.75	(2) RD / YE	(2) 2340	(2) Battery Positive Voltage	(2) I	(2) —

B110 Battery Monitor Module X2

—

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: BBS64596
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way

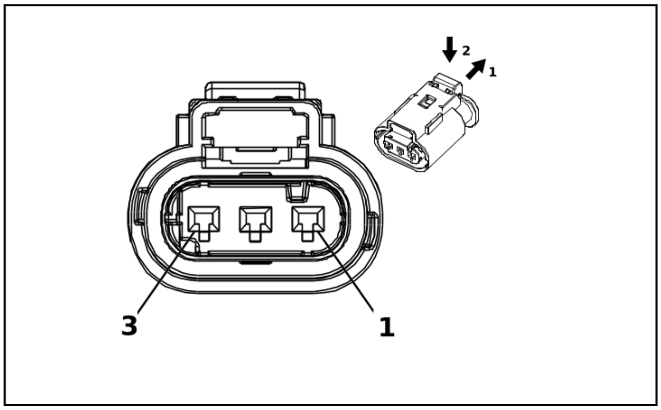
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B110 Battery Monitor Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	0	BK	250	Ground	I	—

B111 Turbocharger/Supercharger Boost Pressure Sensor



2717069

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 10010341
- Service Connector: 84601390
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

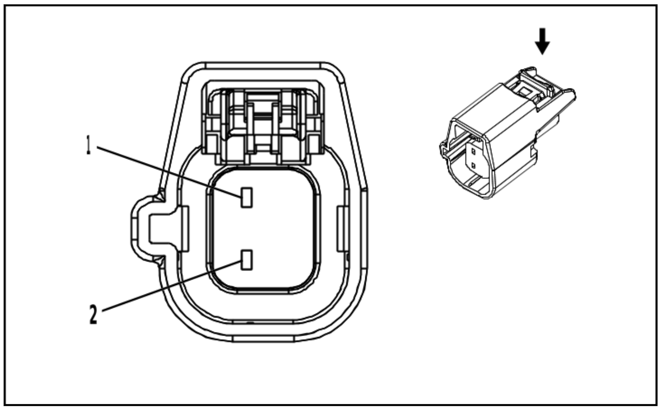
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B111 Turbocharger/Supercharger Boost Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / RD	(1) 10667	(1) Engine Control Sensors 5 Volt Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 3200	(3) Throttle Inlet Absolute Pressure Sensor Signal	(3) I	(3) —

B118 Windshield Washer Solvent Container Level Sensor



3958652

Connector Part Information
- Harness Type: Windshield Washer Pump Extension Wiring Harness
- OEM Connector: 7287-8378-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

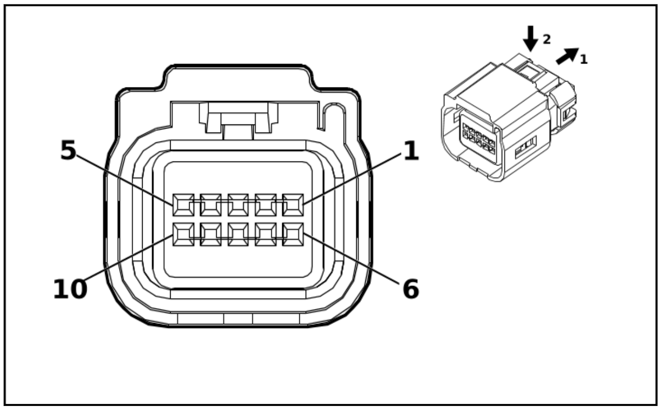
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B118 Windshield Washer Solvent Container Level Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT	(1) 185	(1) Low Washer Fluid Indicator Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK	(2) 2250	(2) Ground	(2) I	(2) —

B137B Power Steering Shaft Torque/Position Sensor



3608469

Connector Part Information
- Harness Type: Power Steering
- OEM Connector: 13587225
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series, Sealed(GY)

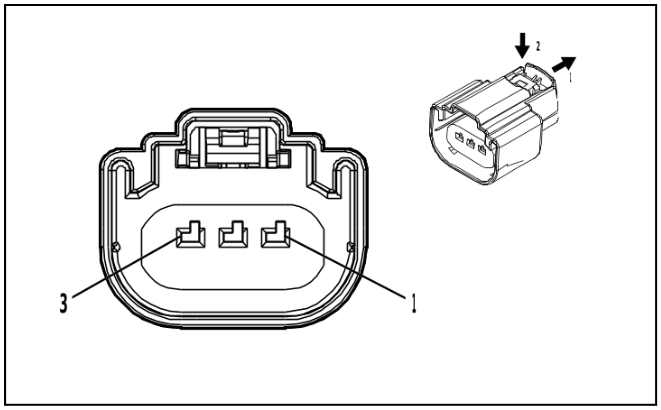
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B137B Power Steering Shaft Torque/Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BU / WH	(1) 8367	(1) Handwheel Channel A Torque Pressure Sensor 1 SENT Signal	(1) I	(1) —
(2) 2	(2) 0	(2) BN / RD	(2) 8366	(2) Handwheel Channel A High Reference	(2) I	(2) —
(3) 3	(3) 0	(3) BK / GN	(3) 8370	(3) Handwheel Channel A Low Reference	(3) I	(3) —
(4) 4	(4) 0	(4) GY / RD	(4) 8371	(4) Handwheel Channel B High Reference	(4) I	(4) —
(5) 5	(5) 0	(5) GN	(5) 8372	(5) Handwheel Channel B Torque Pressure Sensor 1 SENT Signal	(5) I	(5) —
(6) 6	(6) 0	(6) VT	(6) 8368	(6) Handwheel Channel A Torque Pressure Sensor 2 SENT Signal	(6) I	(6) —
(7) 7	(7) 0	(7) WH	(7) 8369	(7) Handwheel Channel A Angle Position Sensor SENT Signal	(7) I	(7) —
(8) 8	(8) 0	(8) BK / GY	(8) 8375	(8) Handwheel Channel B Low Reference	(8) I	(8) —
(9) 9	(9) 0	(9) GN / BU	(9) 8374	(9) Handwheel Channel B Angle Position Sensor SENT Signal	(9) I	(9) —
(10) 10	(10) 0	(10) YE / GN	(10) 8373	(10) Handwheel Channel B Torque Pressure Sensor 2 SENT Signal	(10) I	(10) —

B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)



4569745

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed(BK)

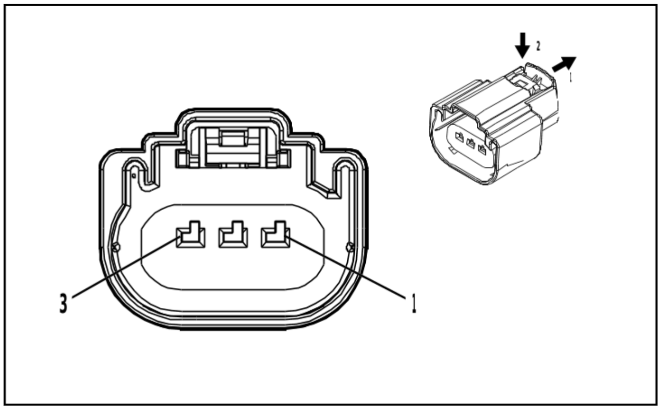
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 7477	(1) Gear Position Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GN	(2) 7479	(2) Rotary Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BK	(3) 7478	(3) Gear Position Sensor Low Reference	(3) I	(3) —

B150 Fuel Tank Pressure Sensor



4589538

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3106
- Service Connector: 84569854
- Description: 3-Way F 1.5 MX Series, Sealed(GY)

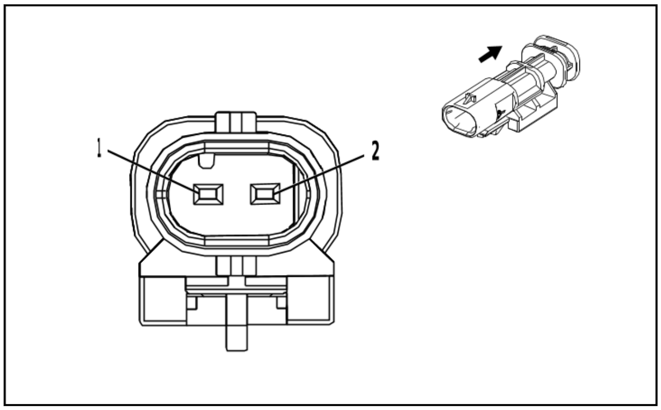
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B150 Fuel Tank Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / WH	(1) 890	(1) Fuel Tank Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BN	(2) 6284	(2) Fuel Tank Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / RD	(3) 2709	(3) Fuel Tank Pressure Sensor 5V Reference	(3) I	(3) —

B153LR Rear Seat Belt Buckle - Left



2474755

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

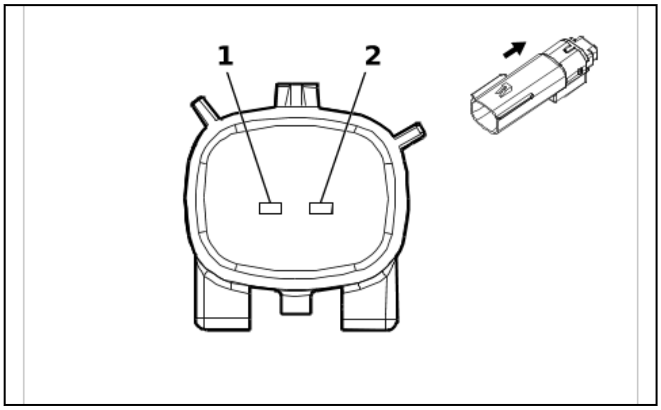
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B153LR Rear Seat Belt Buckle - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / OG	(2) 5161	(2) Left Rear Seat Belt Switch Signal	(2) I	(2) —

B153RM Rear Center Seat Belt Buckle



6366248

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33481-2202
- Service Connector: 85043200
- Description: 2-Way M 1.5 MX Series, Sealed(GY)

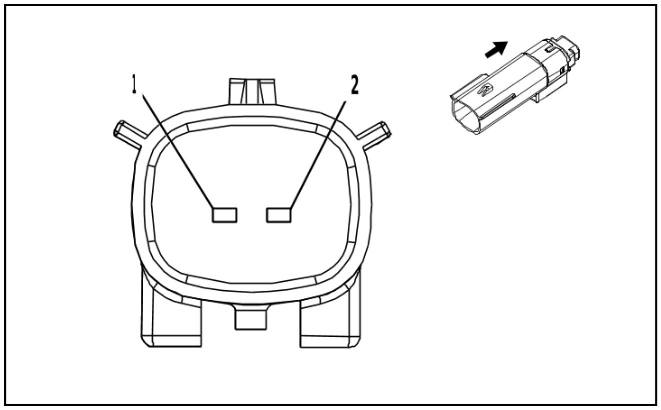
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-3 (GY)	No Tool Required

B153RM Rear Center Seat Belt Buckle

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / OG	(2) 5163	(2) Rear Center Seat Belt Switch Signal	(2) I	(2) —

B153RR Rear Seat Belt Buckle - Right



3338703

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33481-2201
- Service Connector: 84867146
- Description: 2-Way M 1.5 MX Series, Sealed(BK)

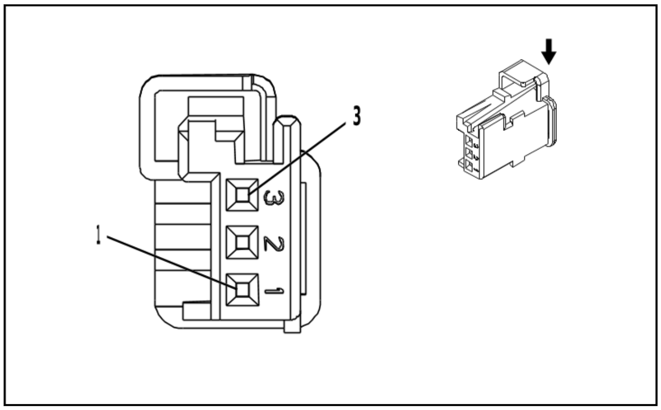
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-3 (GY)	No Tool Required

B153RR Rear Seat Belt Buckle - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / OG	(2) 5162	(2) Right Rear Seat Belt Switch Signal	(2) I	(2) —

B160 Inside Air Moisture and Windshield Temperature Sensor



4218883

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 953697-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series(BK)

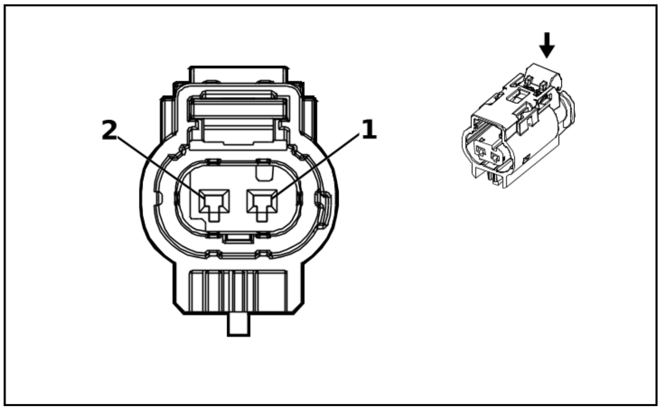
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B160 Inside Air Moisture and Windshield Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / GN	(1) 39	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 1851	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 4115	(3) Body Control Module LIN Bus 5	(3) I	(3) —

B172LF Front Disc Brake Pad Wear Sensor - Left



3747581

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

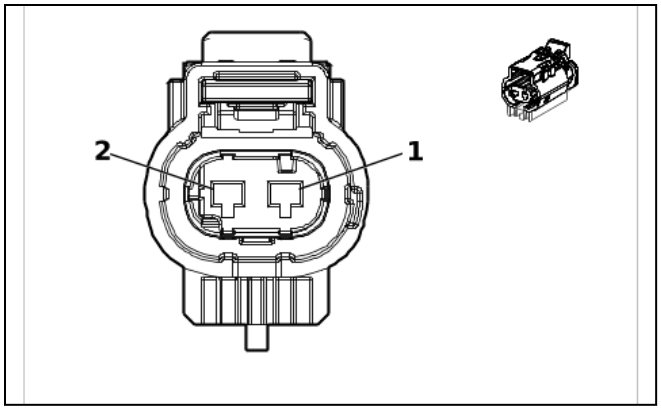
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B172LF Front Disc Brake Pad Wear Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BU	(1) 1602	(1) Front Brake Pad Wear Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 2051	(2) Signal Ground	(2) I	(2) —

B172LR Rear Disc Brake Pad Wear Sensor - Left



6819415

Connector Part Information
- Harness Type: Rear Disc Brake Pad Wear Sensor - Left
- OEM Connector: 13551877
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

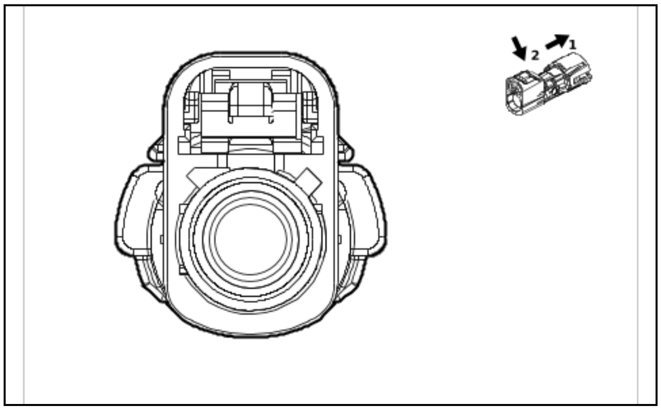
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B172LR Rear Disc Brake Pad Wear Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / YE	(1) 1616	(1) Rear Brake Pad Wear Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / WH	(2) 2051	(2) Signal Ground	(2) I	(2) —

B174G Front View Driver Information Camera - Grille (- T40)



5758030

Connector Part Information

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 13529782
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

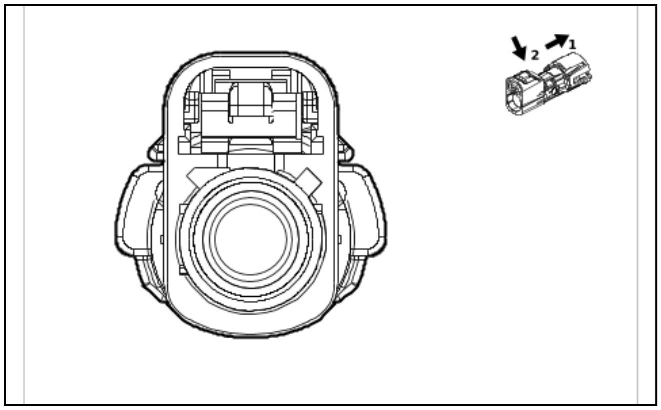
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B174G Front View Driver Information Camera - Grille (- T40)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Front Vision Camera 1 Coaxial Video Signal	I	—

B174G Front View Driver Information Camera - Grille (T40)



5758030

Connector Part Information
- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 13529782
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

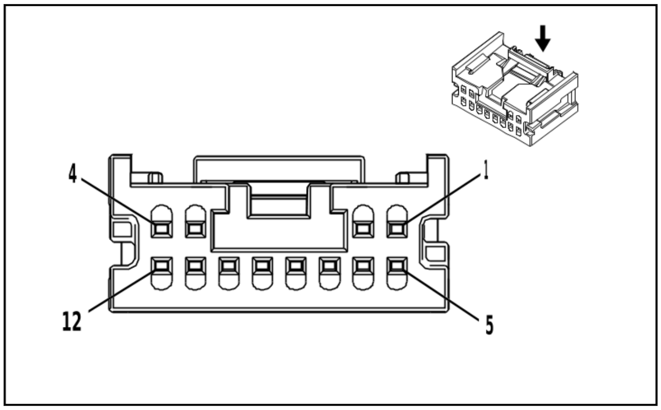
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B174G Front View Driver Information Camera - Grille (T40)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Front Vision Camera 1 Coaxial Video Signal	I	—

B174W Front View Camera - Windshield



3824362

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 34824-5124
- Service Connector: 13507121
- Description: 12-Way F Mini 50 Series(BK)

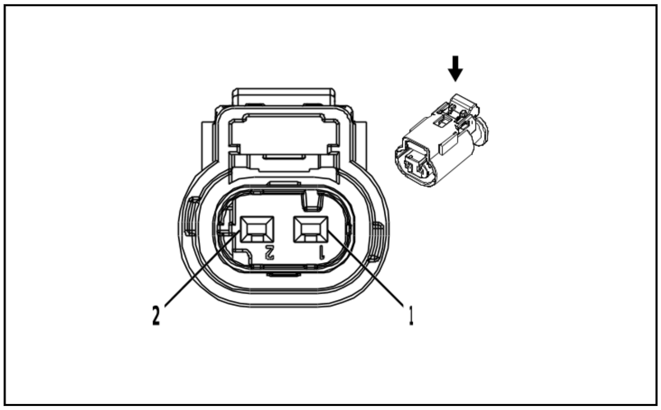
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19333221	EL-35616-58 (BK)	EL-38125-58

B174W Front View Camera - Windshield

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 1851	(1) Signal Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) RD / YE	(3) 240	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / YE	(5) 4979	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4978	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU / YE	(7) 4979	(7) AUTOSAR CAN Bus [+] 2 Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) WH	(8) 4978	(8) AUTOSAR CAN Bus [-] 2 Serial Data	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—

B203 Radiator Coolant Temperature Sensor



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

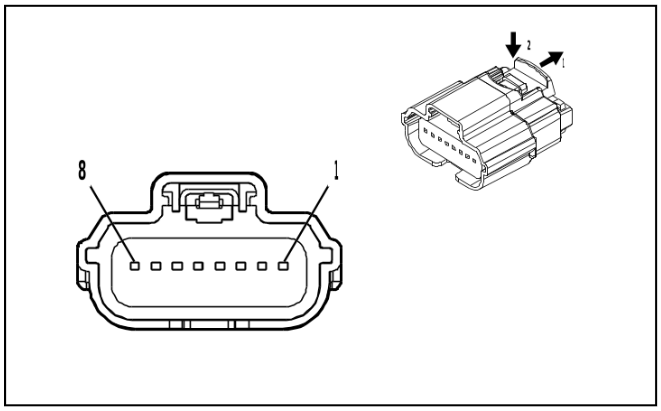
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B203 Radiator Coolant Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BK	(1) 3000	(1) Coolant Temperature Sensor 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —

B218L Side Obstacle Detection Control Module - Left



4708234

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

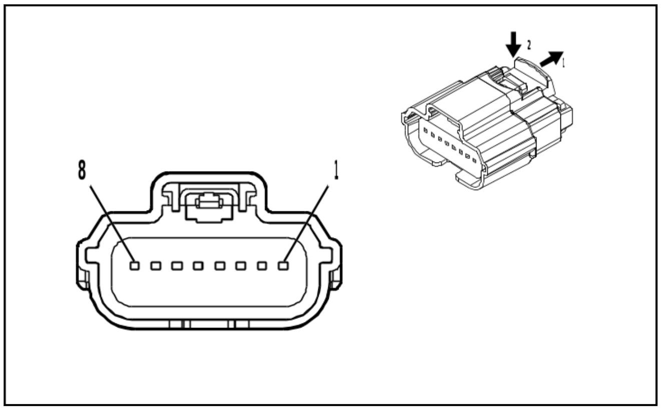
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B218L Side Obstacle Detection Control Module - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4087	(1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 4088	(2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 751	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4100	(4) AUTOSAR CAN Bus [-] 4 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4100	(5) AUTOSAR CAN Bus [-] 4 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / VT	(6) 4101	(6) AUTOSAR CAN Bus [+] 4 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU / VT	(7) 4101	(7) AUTOSAR CAN Bus [+] 4 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) RD / BN	(8) 4940	(8) Battery Positive Voltage	(8) I	(8) —

B218R Side Obstacle Detection Control Module - Right



4708234

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9532
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

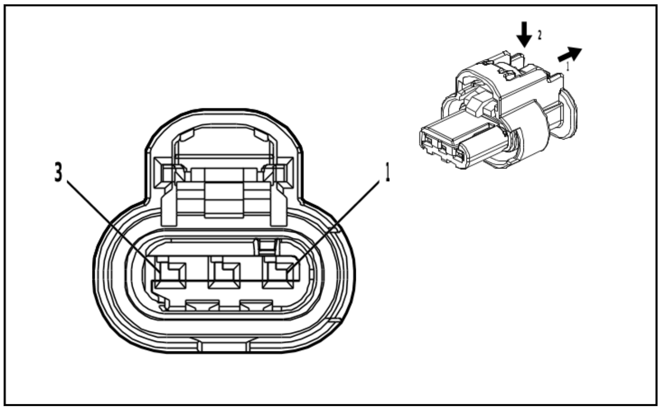
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B218R Side Obstacle Detection Control Module - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4087	(1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 4088	(2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 751	(3) Signal Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) WH	(5) 4100	(5) AUTOSAR CAN Bus [-] 4 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / VT	(6) 4101	(6) AUTOSAR CAN Bus [+] 4 Serial Data	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) RD / BN	(8) 4940	(8) Battery Positive Voltage	(8) I	(8) —

B306E Parking Assist Alarm Sensor - Rear Left Outer



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

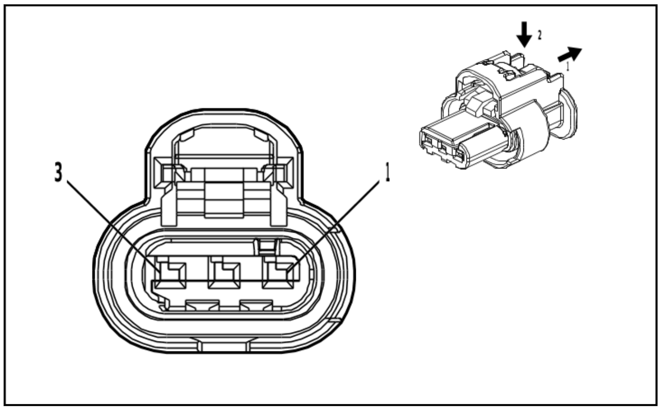
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B306E Parking Assist Alarm Sensor - Rear Left Outer

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 2375	(2) Left Rear Outer Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306F Parking Assist Alarm Sensor - Rear Left Middle



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

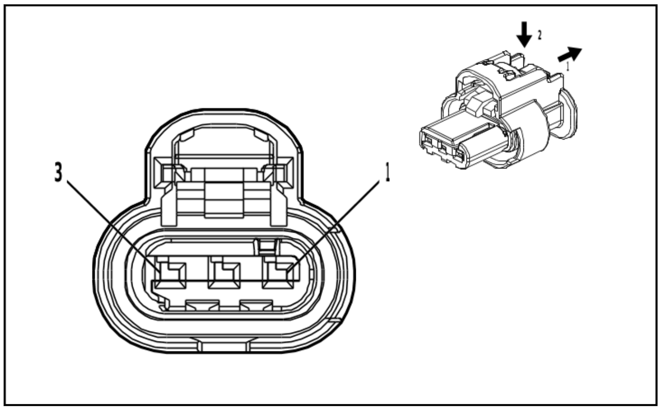
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B306F Parking Assist Alarm Sensor - Rear Left Middle

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BU	(2) 2376	(2) Left Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306G Parking Assist Alarm Sensor - Rear Right Middle



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

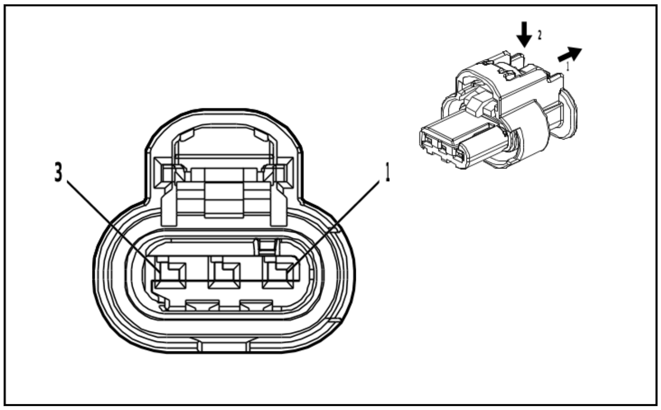
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B306G Parking Assist Alarm Sensor - Rear Right Middle

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / WH	(2) 2377	(2) Right Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306H Parking Assist Alarm Sensor - Rear Right Outer



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

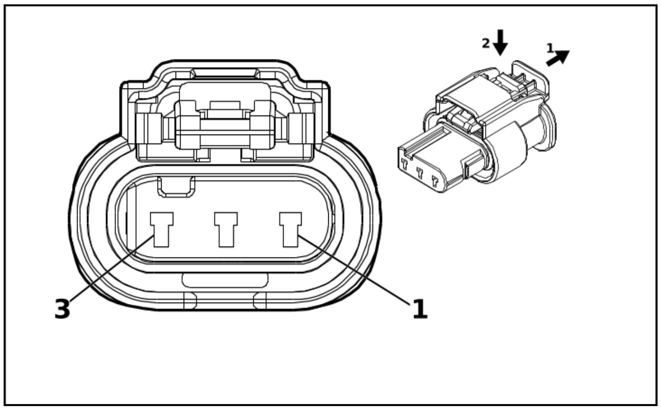
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B306H Parking Assist Alarm Sensor - Rear Right Outer

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 2378	(2) Right Rear Outer Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B310 Fuel Pressure and Temperature Sensor



5420917

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34900-3127
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-LL Series, Sealed(GY)

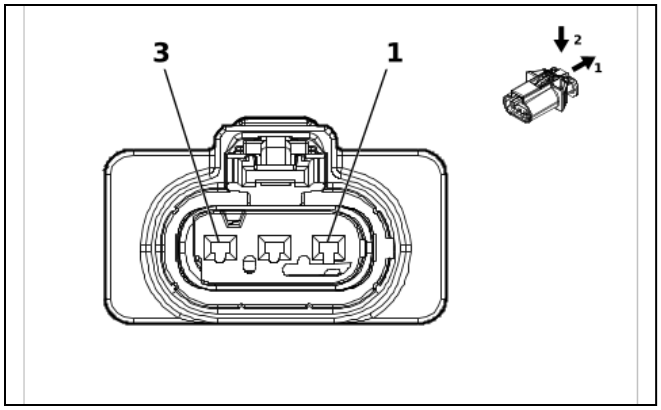
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B310 Fuel Pressure and Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GN	(1) 580	(1) Engine Control Sensors Low Reference 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 2918	(2) Fuel Rail Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —

B321 Crankcase Pressure Sensor



6530824

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35748533
- Service Connector: 85736068
- Description: 3-Way F 1.2 MLK Series, Sealed(BK)

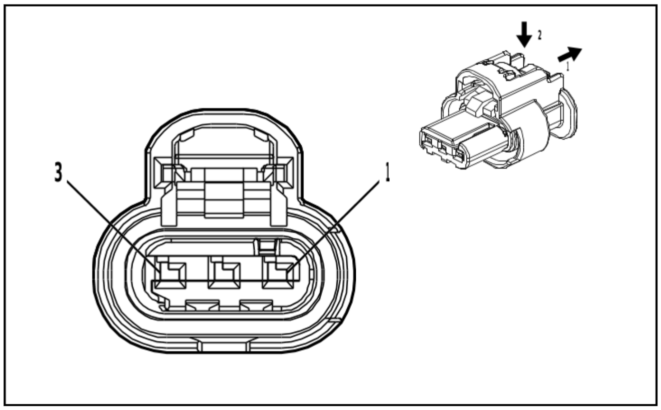
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B321 Crankcase Pressure Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 3926	(1) Crankcase Differential Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B338A Intake Camshaft Profile Sleeve Position Sensor 1



4581126

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

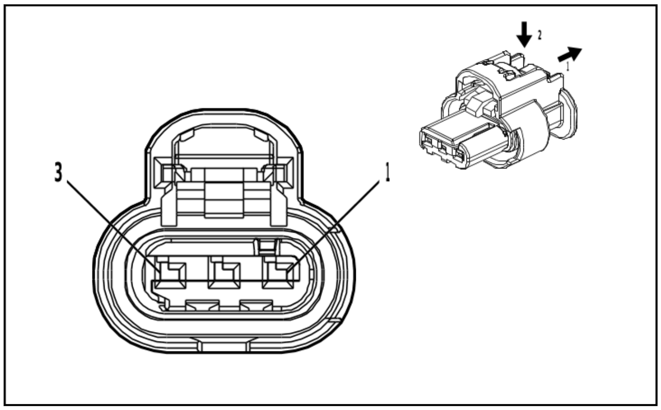
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B338A Intake Camshaft Profile Sleeve Position Sensor 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 3744	(3) Camshaft Intake Lobe Axial Position Signal 1	(3) I	(3) —

B338B Intake Camshaft Profile Sleeve Position Sensor 2



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

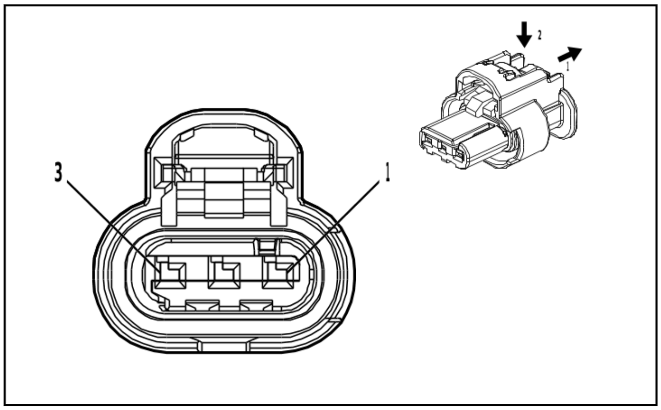
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B338B Intake Camshaft Profile Sleeve Position Sensor 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / GN	(3) 3745	(3) Camshaft Intake Lobe Axial Position Signal 2	(3) I	(3) —

B339A Exhaust Camshaft Profile Sleeve Position Sensor 1



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

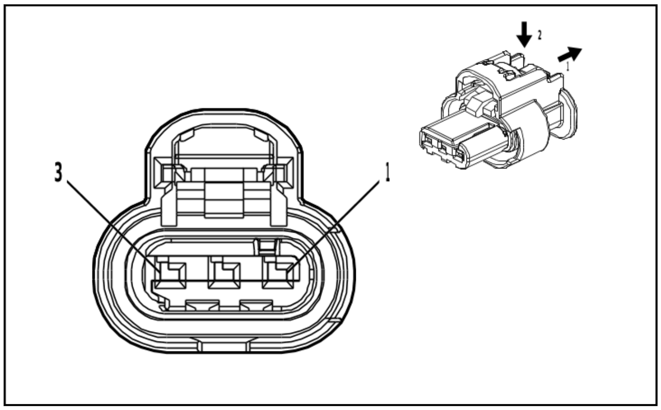
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B339A Exhaust Camshaft Profile Sleeve Position Sensor 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 3746	(3) Camshaft Exhaust Lobe Axial Position Signal 1	(3) I	(3) —

B339B Exhaust Camshaft Profile Sleeve Position Sensor 2



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

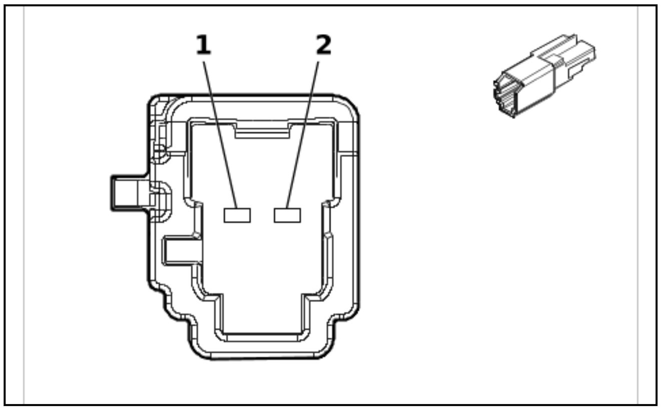
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B339B Exhaust Camshaft Profile Sleeve Position Sensor 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 3747	(3) Camshaft Exhaust Lobe Axial Position Signal 2	(3) I	(3) —

B355 Communication Interface Module Microphone



6529127

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: 85725004
- Description: 2-Way M 1.2 MBS Series(GY)

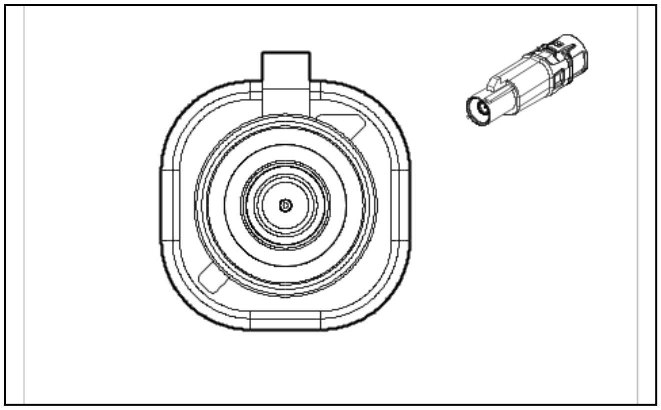
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B355 Communication Interface Module Microphone

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BK	(1) 7044	(1) Microphone [-] Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / YE	(2) 7043	(2) Microphone [+] Signal	(2) I	(2) —

B384 Rearview Underbody Camera (UXA)



6154842

Connector Part Information
- Harness Type: Rearview Camera Wiring Harness
- OEM Connector: 13517385
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(GY)

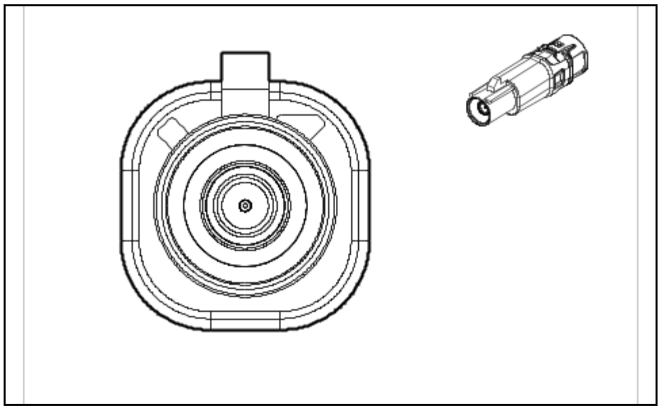
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B384 Rearview Underbody Camera (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	I	—

B385 Front View Underbody Camera (UXA)



5295025

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness
- OEM Connector: 13517379
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

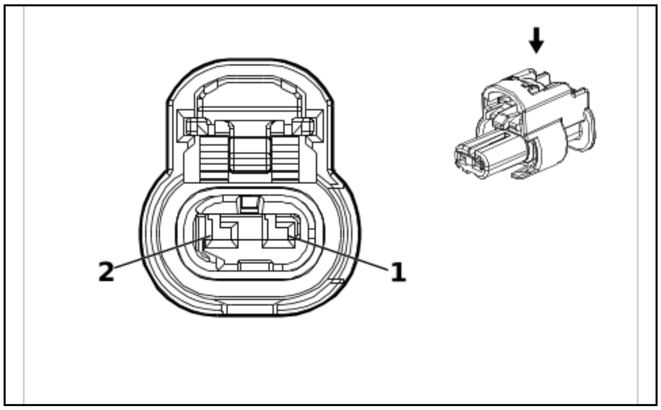
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B385 Front View Underbody Camera (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	I	—

E2LFW Front Side Marker Lamp - Left Wheel Opening Molding



4335931

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

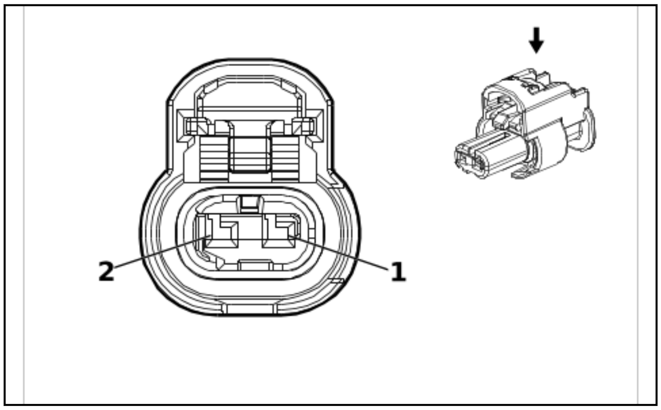
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E2LFW Front Side Marker Lamp - Left Wheel Opening Molding

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 3750	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) Identification Lamp Control	(2) I	(2) —

E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding



4335931

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

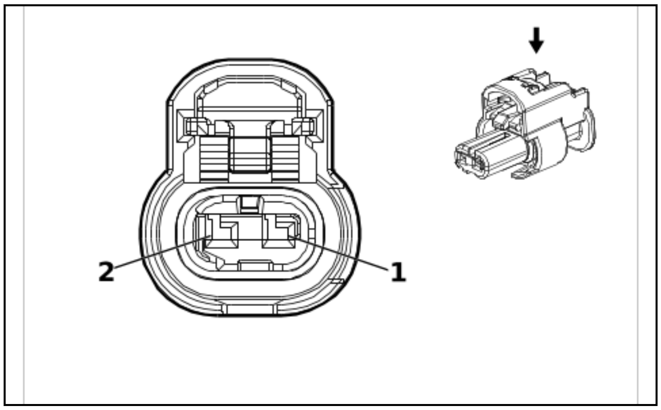
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) Identification Lamp Control	(2) I	(2) —

E2RFW Front Side Marker Lamp - Right Wheel Opening Molding



4335931

Connector Part Information
- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

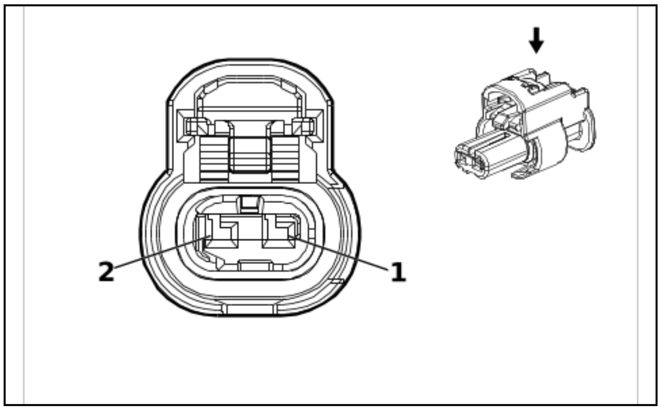
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E2RFW Front Side Marker Lamp - Right Wheel Opening Molding

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 2050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / WH	(2) 3200	(2) Throttle Inlet Absolute Pressure Sensor Signal	(2) I	(2) —

E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding



4335931

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1-2296694-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

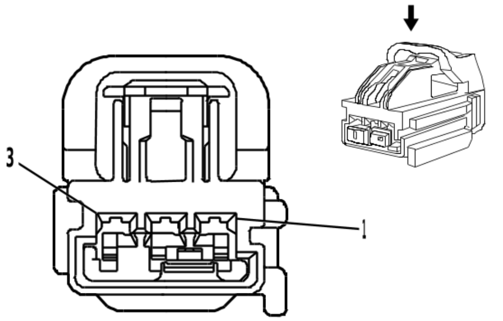
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) Identification Lamp Control	(2) I	(2) —

E6 High Mount Stop Lamp



1787799

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-3440-40
- Service Connector: 86825460
- Description: 3-Way F 1.5 Kaizen Series(L-GY)

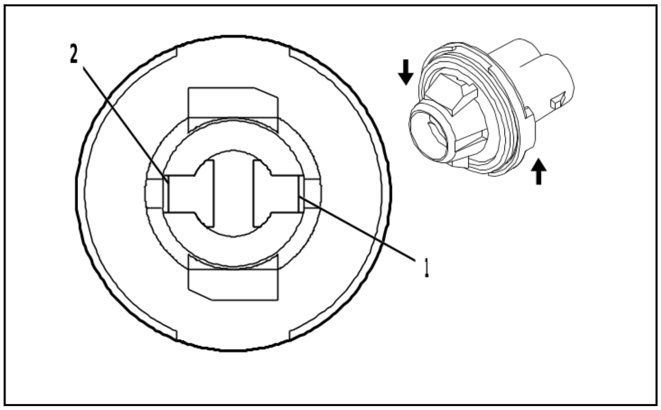
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

E6 High Mount Stop Lamp

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) Exterior Courtesy Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / BK	(2) 1053	(2) Center High Mounted Stop Lamp Control 3	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 550	(3) Ground	(3) I	(3) —

E7L Rear License Plate Lamp - Left



5153536

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2(D-GY)

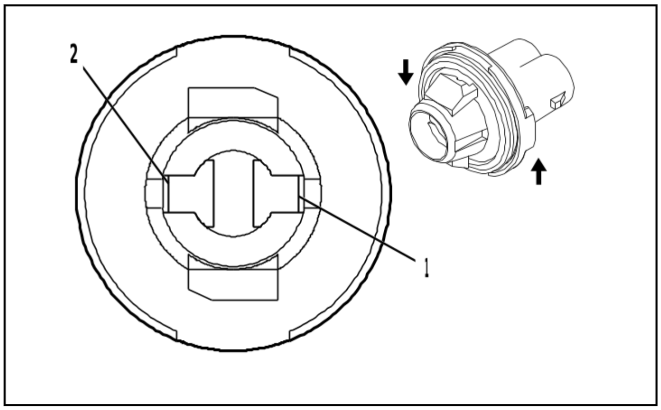
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E7L Rear License Plate Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / YE	(1) 6846	(1) Rear License Plate Lamp Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK	(2) 750	(2) Ground	(2) I	(2) —

E7R Rear License Plate Lamp - Right



5153536

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2(D-GY)

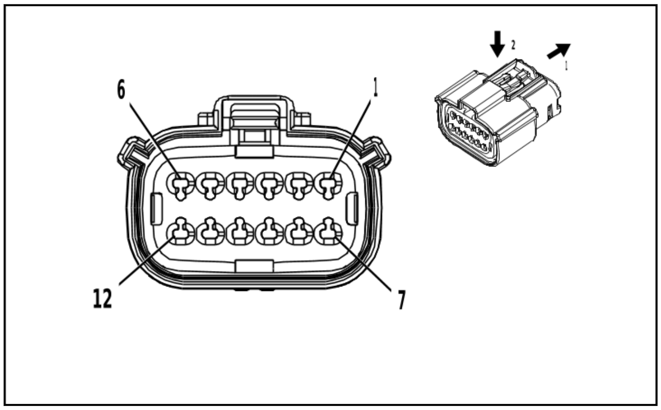
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E7R Rear License Plate Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / YE	(1) 6846	(1) Rear License Plate Lamp Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK	(2) 750	(2) Ground	(2) I	(2) —

E13LA Front Headlamp - Left



2871860

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 33472-1256
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

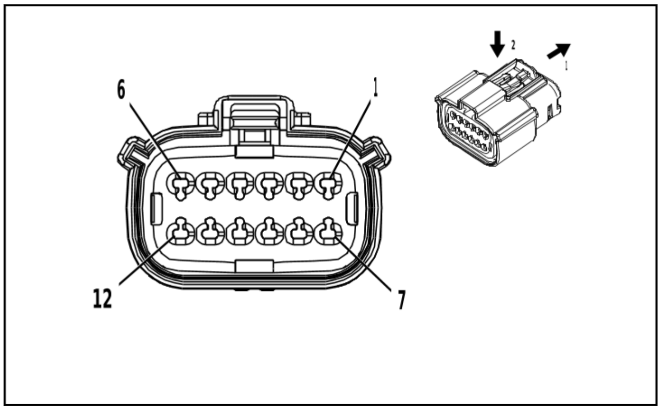
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217

E13LA Front Headlamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 150	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) RD / WH	(2) 640	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE	(3) 712	(3) Left Headlamp Low Beam Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 711	(4) Left Headlamp High Beam Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GY / BU	(5) 7538	(5) Left Front DRL Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / YE	(6) 1254	(6) Left Front Park Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU / WH	(7) 1314	(7) Left Front Turn Signal Lamp Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) VT / BK	(8) 6568	(8) Front Turn Signal Lamp Feedback Signal	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—

E13RA Front Headlamp - Right



2871860

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 33472-1256
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

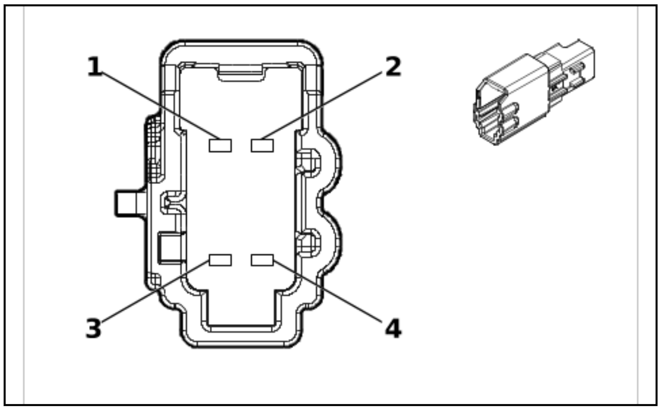
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217

E13RA Front Headlamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 250	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) RD / YE	(2) 740	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.75	(3) YE	(3) 312	(3) Right Headlamp Low Beam Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 311	(4) Right Headlamp High Beam Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / BN	(5) 7539	(5) Right Front DRL Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GN	(6) 1253	(6) Right Front Park Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) GN / VT	(7) 1315	(7) Right Front Turn Signal Lamp Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) WH / YE	(8) 7545	(8) Right Front Turn Signal Lamp Feedback Signal	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—

E14A Front Seat Back Heater - Driver



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

Terminal Part Information

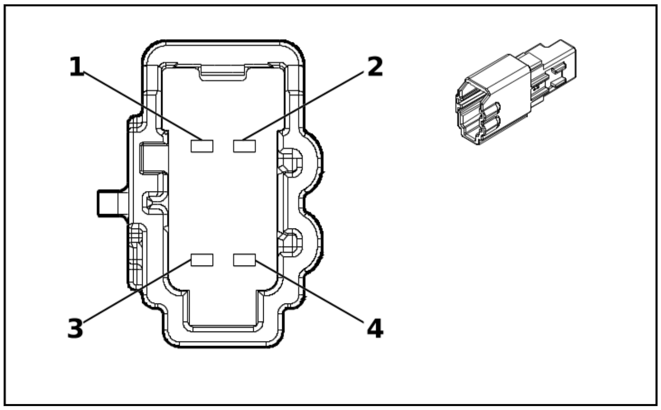
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

E14A Front Seat Back Heater - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / VT	(1) 2077	(1) Driver Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 2425	(2) Driver Seat Back Heating Temperature Sensor Signal	(2) II	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BK / YE	(3) 2080	(3) Driver Heated Seat Thermistor Low Reference	(3) II	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —

E14B Front Seat Cushion Heater - Driver



5360963

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

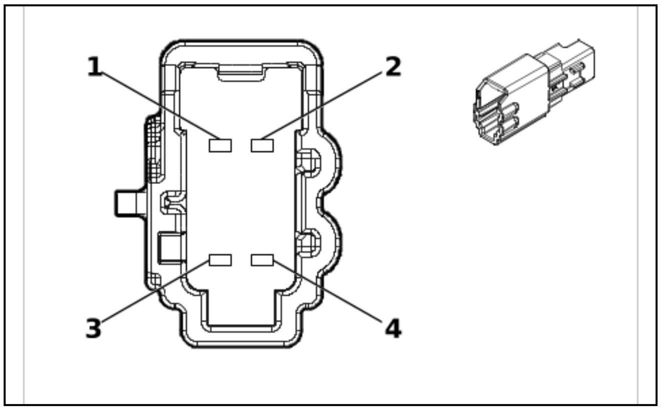
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

E14B Front Seat Cushion Heater - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / VT	(1) 2077	(1) Driver Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / GY	(2) 2079	(2) Driver Seat Heating Temperature Sensor Signal	(2) II	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 2080	(3) Driver Heated Seat Thermistor Low Reference	(3) II	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —

E14C Front Seat Back Heater - Passenger (KA1)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

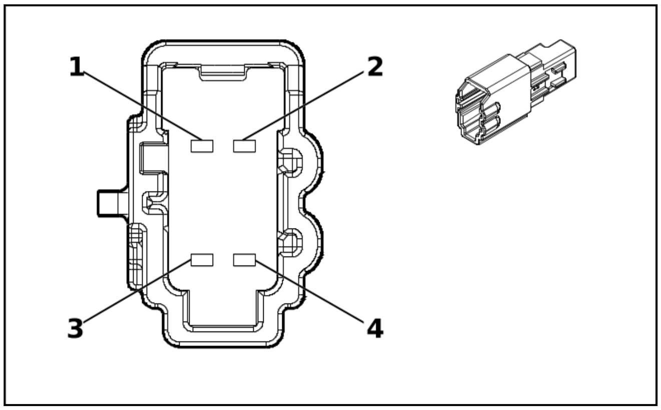
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

E14C Front Seat Back Heater - Passenger (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 2479	(1) Passenger Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / BU	(2) 2436	(2) Passenger Seat Back Heating Temperature Sensor Signal	(2) II	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 2482	(3) Passenger Heated Back Thermistor Low Reference	(3) II	(3) —
(4) 4	(4) 0.75	(4) GY / BK	(4) 2480	(4) Passenger Seat Heating Element Low Reference	(4) I	(4) —

E14D Front Seat Cushion Heater - Passenger (KA1)



5360963

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

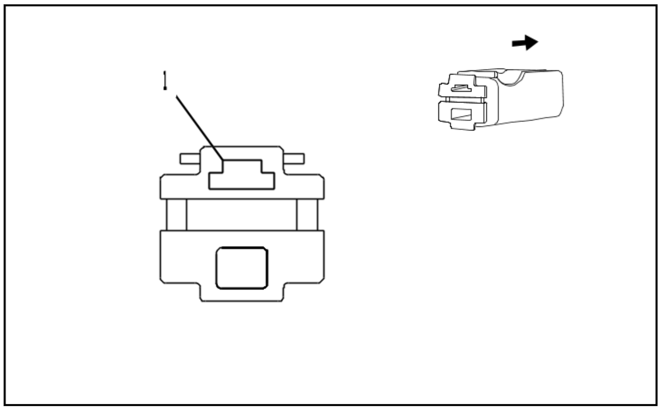
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

E14D Front Seat Cushion Heater - Passenger (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 2479	(1) Passenger Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GY	(2) 2434	(2) Passenger Seat Heating Temperature Sensor Signal	(2) II	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2435	(3) Passenger Heated Seat Thermistor Low Reference	(3) II	(3) —
(4) 4	(4) 0.75	(4) GY / BK	(4) 2480	(4) Passenger Seat Heating Element Low Reference	(4) I	(4) —

E18 Rear Window Defogger Grid X1



1413086

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series(BK)

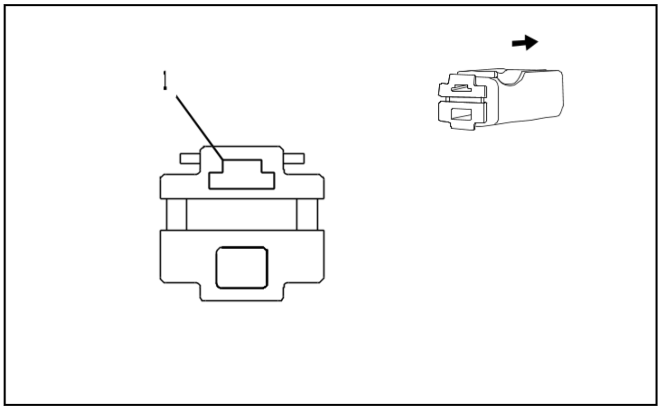
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

E18 Rear Window Defogger Grid X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BN / VT	(1) 293	(1) Rear Defogger Grid Control	(1) I	(1) —

E18 Rear Window Defogger Grid X2



1413086

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series(BK)

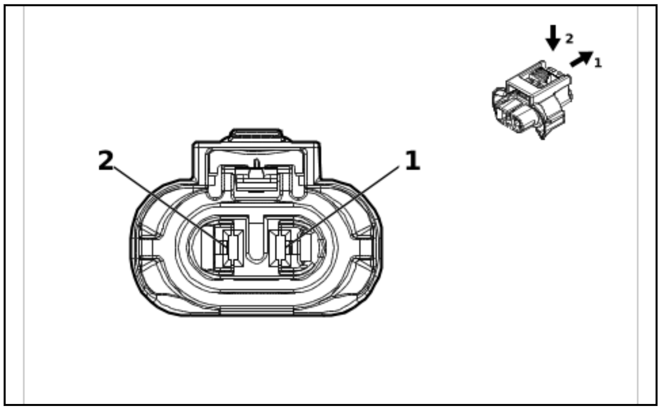
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

E18 Rear Window Defogger Grid X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 550	(1) Ground	(1) I	(1) —

E29LF Front Fog Lamp - Left



6543452

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 33342774
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

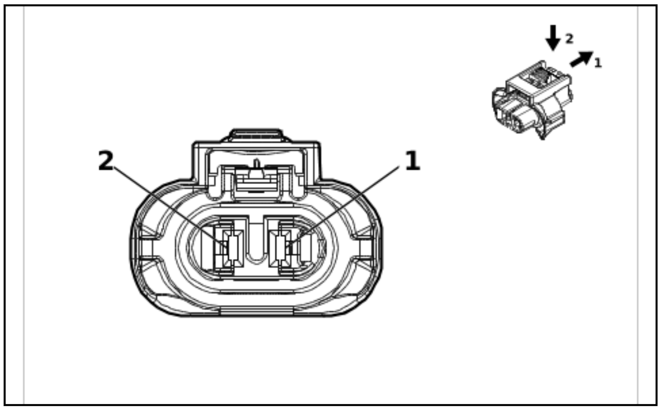
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

E29LF Front Fog Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BN / GY	(1) 5061	(1) Left Front Fog Lamp Control	(1) I	(1) —
(2) 2	(2) 1.5	(2) BK	(2) 550	(2) Ground	(2) I	(2) —

E29RF Front Fog Lamp - Right



6543452

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 33342774
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

E29RF Front Fog Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BN / GY	(1) 5061	(1) Left Front Fog Lamp Control	(1) I	(1) —
(2) 2	(2) 1.5	(2) BK	(2) 550	(2) Ground	(2) I	(2) —

E33L Cargo Lamp - Left

—

Connector Part Information
- Harness Type: Cargo Lamp - Left
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E33L Cargo Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 7762	(1) Cargo Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 750	(2) Ground	(2) I	(2) —

E33R Cargo Lamp - Right

—

Connector Part Information
- Harness Type: Cargo Lamp Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

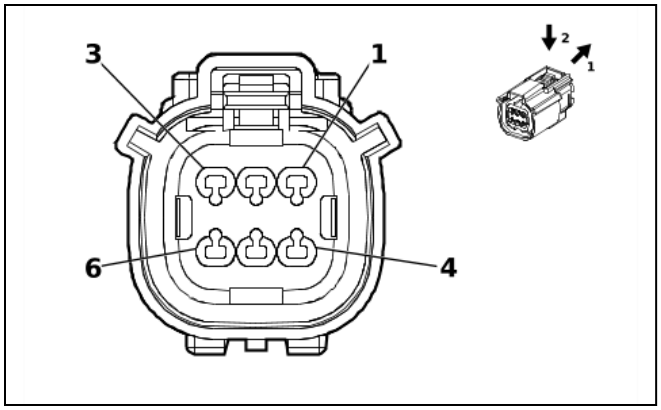
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E33R Cargo Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 7762	(1) Cargo Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 750	(2) Ground	(2) I	(2) —

E42L Rear Body Structure Stop Lamp - Left



5666225

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-0705
- Service Connector: 86526151
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

Terminal Part Information

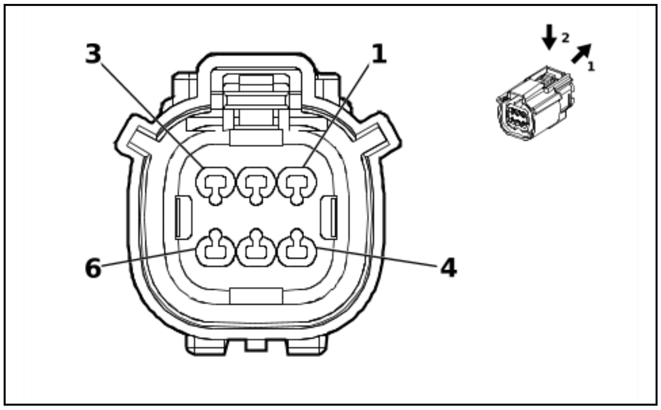
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

E42L Rear Body Structure Stop Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 750	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 1334	(2) Left Rear Turn Signal Lamp Control 2	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BN / BU	(3) 6993	(3) Left Rear Park Lamp Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) Backup Lamp Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN / WH	(5) 24	(5) Backup Lamp Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

E42R Rear Body Structure Stop Lamp - Right



5666225

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-0705
- Service Connector: 86526151
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

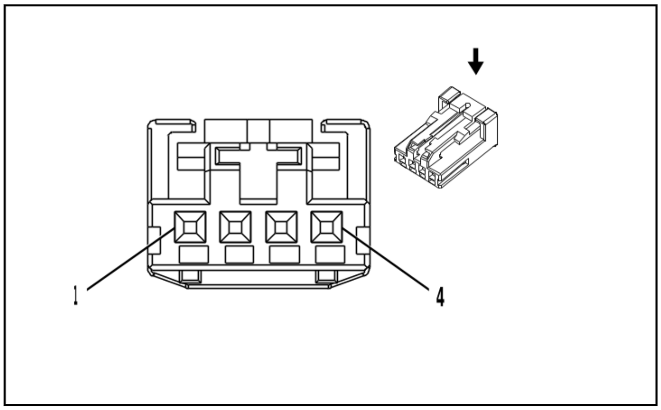
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

E42R Rear Body Structure Stop Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / VT	(2) 1335	(2) Right Rear Turn Signal Lamp Control 2	(2) I	(2) T93+ X88{INVALID{INVALID{INVALID
(3) 3	(3) 0.5	(3) BN / GY	(3) 6995	(3) Right Rear Park Lamp Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) Backup Lamp Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN / WH	(5) 24	(5) Backup Lamp Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

E97 Rear Seat Position Center Courtesy Lamp (- CAC)



2717162

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

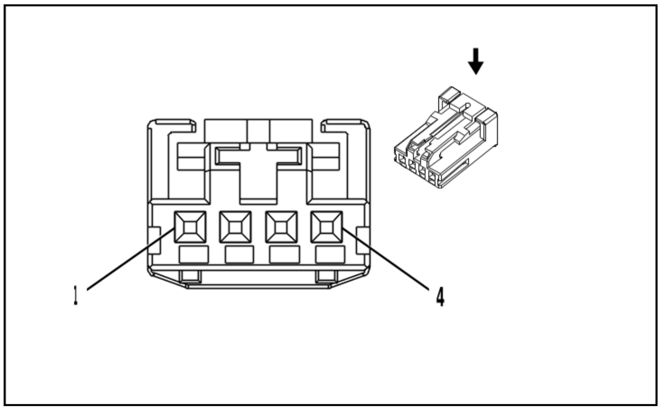
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

E97 Rear Seat Position Center Courtesy Lamp (- CAC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 6815	(1) Inadvertent Load Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BK	(3) 4250	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY	(4) 157	(4) Interior Lamp Control	(4) I	(4) —

E97 Rear Seat Position Center Courtesy Lamp (CAC)



2717162

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

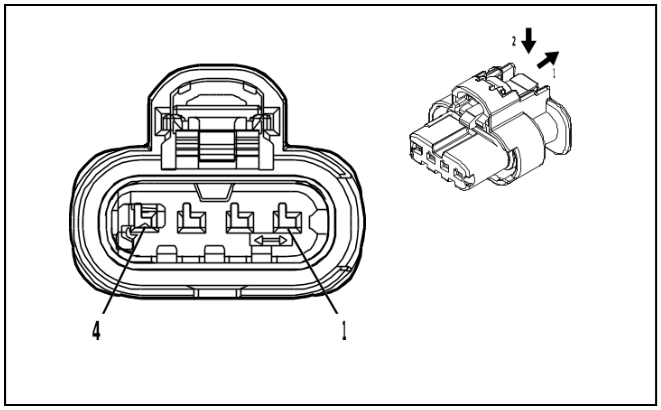
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

E97 Rear Seat Position Center Courtesy Lamp (CAC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 6815	(1) Inadvertent Load Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BK	(3) 4250	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY	(4) 157	(4) Interior Lamp Control	(4) I	(4) —

F101 Instrument Panel Airbag



4280383

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2296700-6
- Service Connector: 19368563
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(YE)

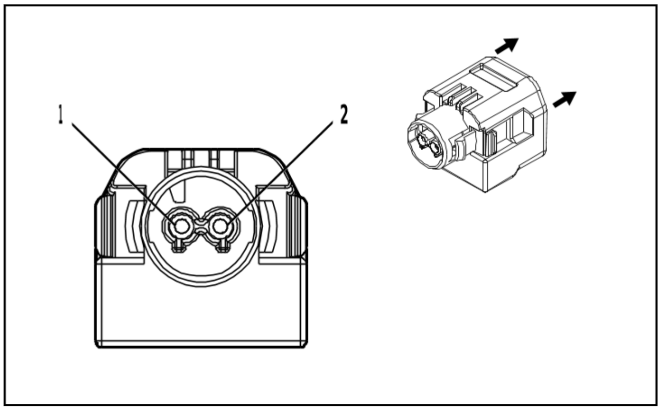
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

F101 Instrument Panel Airbag

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / WH	(1) 3024	(1) Passenger Instrument Panel Air Bag Stage 1 Low Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / OG	(2) 3025	(2) Passenger Instrument Panel Air Bag Stage 1 High Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) OG / VT	(3) 3026	(3) Passenger Instrument Panel Air Bag Stage 2 Low Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / OG	(4) 3027	(4) Passenger Instrument Panel Air Bag Stage 2 High Control	(4) I	(4) —

F105L Front and Rear Row Roof Rail Airbag - Left



4676225

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-1802367-3
- Service Connector: 13529172
- Description: 2-Way F ABX-5 Series(GY with YE Cover)

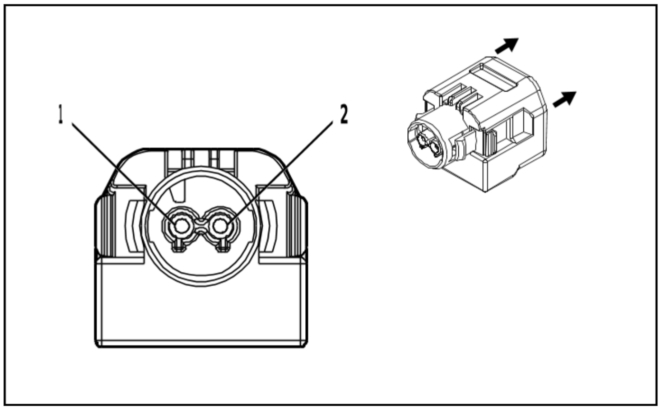
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F105L Front and Rear Row Roof Rail Airbag - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 5019	(1) Left Front Roof Rail Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 5020	(2) Left Front Roof Rail Air Bag Low Control	(2) I	(2) —

F105R Front and Rear Row Roof Rail Airbag - Right



4676225

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-1802367-3
- Service Connector: 13529172
- Description: 2-Way F ABX-5 Series(GY with YE Cover)

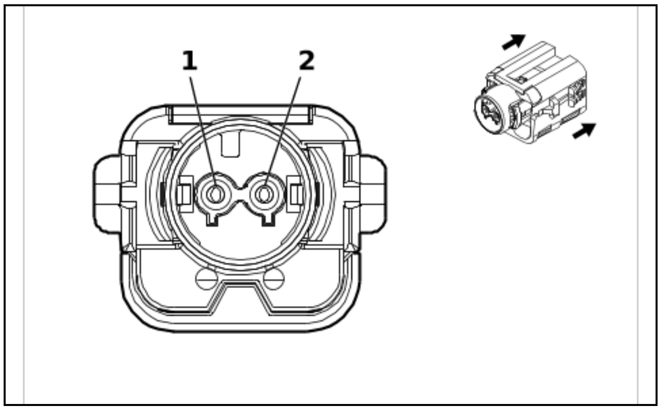
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F105R Front and Rear Row Roof Rail Airbag - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GY	(1) 5021	(1) Right Front Roof Rail Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 5022	(2) Right Front Roof Rail Air Bag Low Control	(2) I	(2) —

F106D Front Seat Outboard Seat Back Airbag - Driver



5499727

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13535270
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

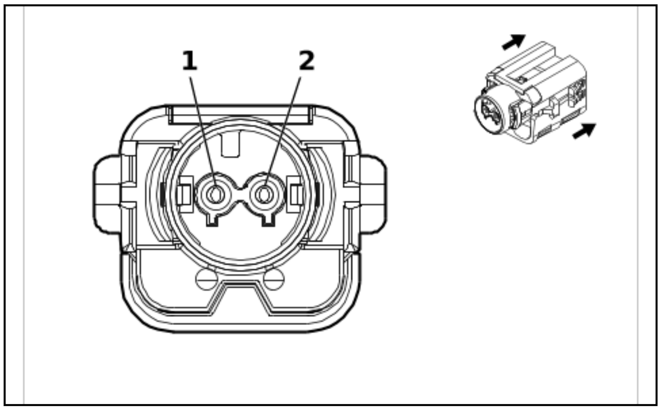
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F106D Front Seat Outboard Seat Back Airbag - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BU	(1) 4962	(1) Driver Seat Back Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 4963	(2) Driver Seat Back Air Bag Low Control	(2) I	(2) —

F106P Front Seat Outboard Seat Back Airbag - Passenger



5499727

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13535270
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

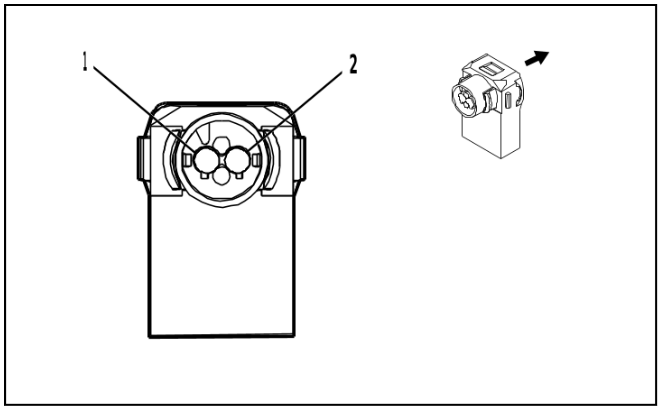
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F106P Front Seat Outboard Seat Back Airbag - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GY	(1) 4956	(1) Passenger Seat Back Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / OG	(2) 4957	(2) Passenger Seat Back Air Bag Low Control	(2) I	(2) —

F107 Steering Wheel Airbag



4679778

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 33345783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(GY with YE Cover)

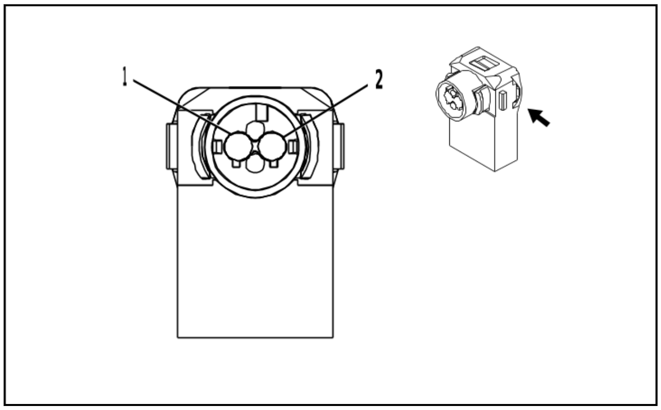
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

F107 Steering Wheel Airbag

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) OG / VT	(1) 3021	(1) Steering Wheel Air Bag Stage 1 High Control	(1) I	(1) —
(2) 2	(2) 0	(2) BN / OG	(2) 3020	(2) Steering Wheel Air Bag Stage 1 Low Control	(2) I	(2) —

F112D Front Seat Belt Retractor - Driver



4241364

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

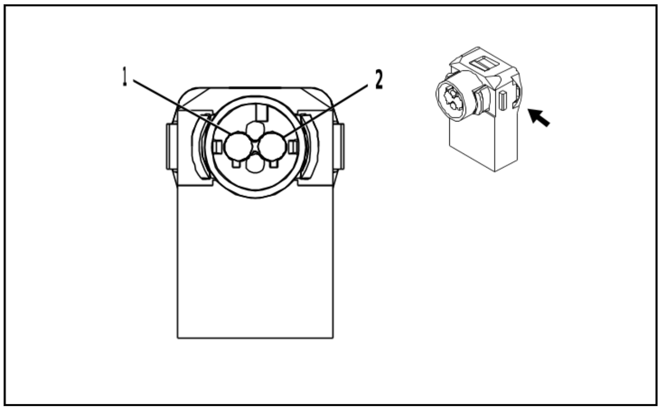
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F112D Front Seat Belt Retractor - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / WH	(1) 3477	(1) Driver Seat Belt Retractor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 3478	(2) Driver Seat Belt Retractor Pretensioner Low Control	(2) I	(2) —

F112P Front Seat Belt Retractor - Passenger



4241364

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

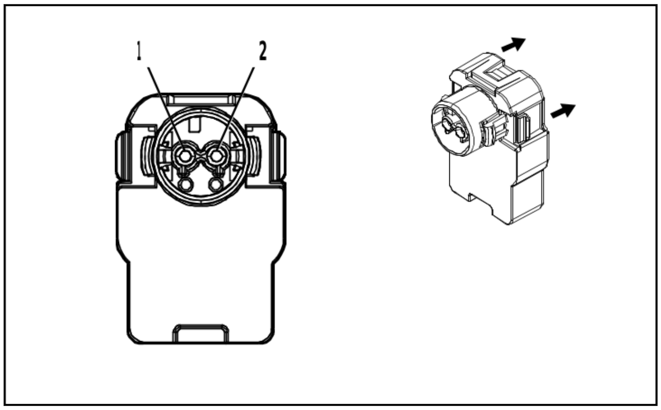
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F112P Front Seat Belt Retractor - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 3475	(1) Passenger Seat Belt Retractor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 3476	(2) Passenger Seat Belt Retractor Pretensioner Low Control	(2) I	(2) —

F113D Front Seat Belt Anchor Plate Tensioner - Driver



4823732

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1-1802365-1
- Service Connector: 13530531
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

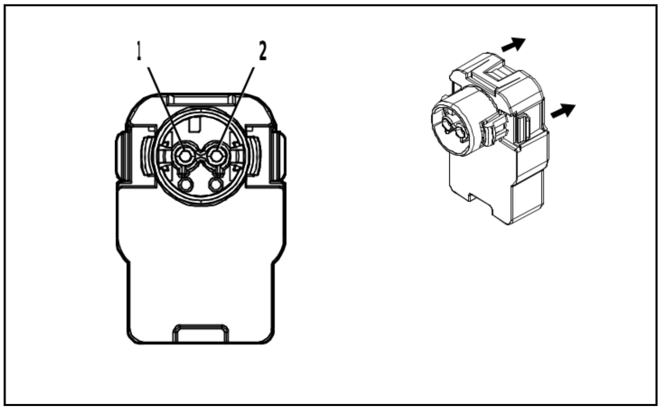
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F113D Front Seat Belt Anchor Plate Tensioner - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / YE	(1) 3481	(1) Driver Seat Belt Anchor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 3482	(2) Driver Seat Belt Anchor Pretensioner Low Control	(2) I	(2) —

F113P Front Seat Belt Anchor Plate Tensioner - Passenger



4823732

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-1802365-1
- Service Connector: 13530531
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

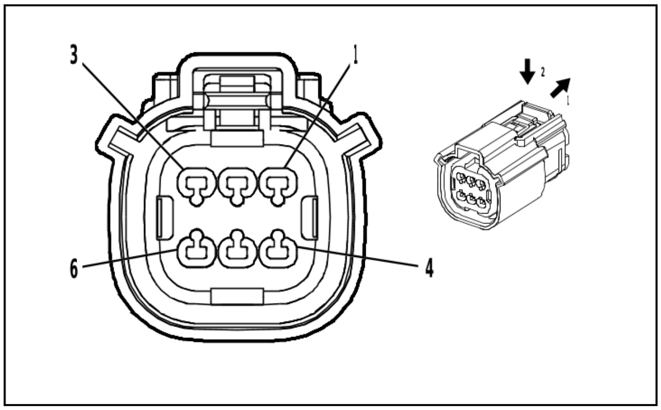
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F113P Front Seat Belt Anchor Plate Tensioner - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BN	(1) 3479	(1) Passenger Seat Belt Anchor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / OG	(2) 3480	(2) Passenger Seat Belt Anchor Pretensioner Low Control	(2) I	(2) —

G5 Automatic Transmission Auxiliary Fluid Pump



4574736

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 160038-3009
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(WH)

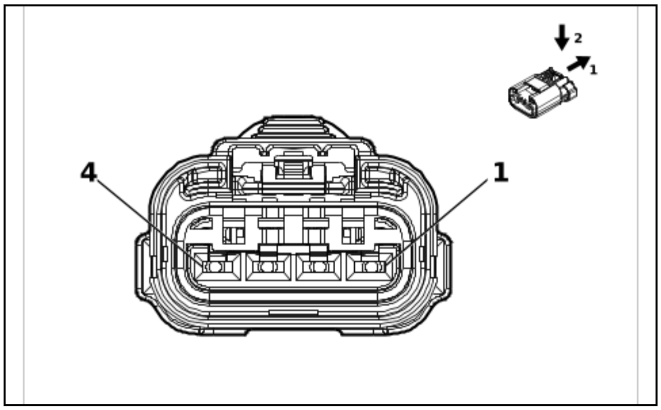
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

G5 Automatic Transmission Auxiliary Fluid Pump

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) RD / GN	(1) 40	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / GY	(3) 6387	(3) Transmission High Side Driver 1 Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 2968	(4) Transmission Auxiliary Fluid Pump Control	(4) II	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) BK	(6) 6250	(6) Transmission Ground	(6) I	(6) —

G10L Cooling Fan Motor - Left



5838592

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

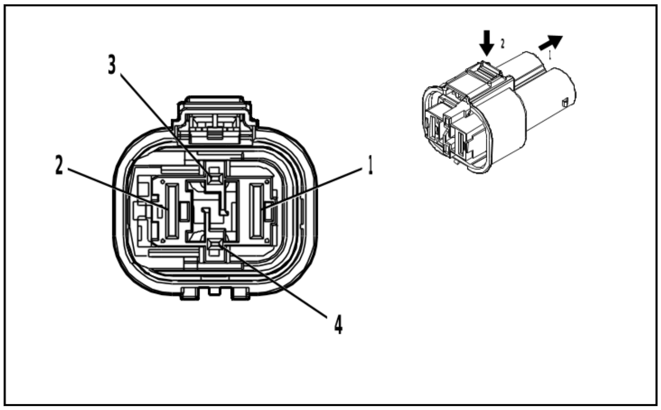
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G10L Cooling Fan Motor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 150	(1) Ground	(1) I	(1) —
(2) 2	(2) 5	(2) RD / BU	(2) 1542	(2) Battery Positive Voltage	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10LW Cooling Fan Motor - Lower



4847569

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-1
- Service Connector: 84766431
- Description: 4-Way F 1.2, 9.5 MCON Series, Sealed(BK)

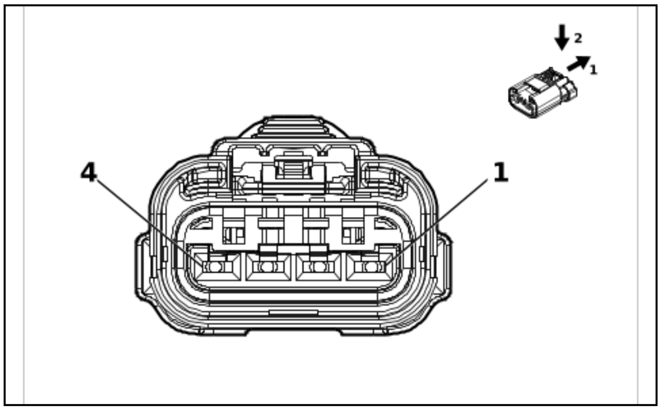
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G10LW Cooling Fan Motor - Lower

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) RD / GY	(1) 1342	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 5	(2) BK	(2) 150	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4623	(3) Engine Control Module LIN Bus 3	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

G10R Cooling Fan Motor - Right



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

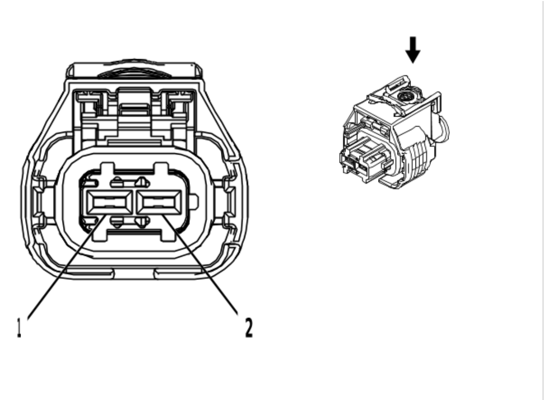
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G10R Cooling Fan Motor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 150	(1) Ground	(1) I	(1) —
(2) 2	(2) 5	(2) RD / BU	(2) 1542	(2) Battery Positive Voltage	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G13 Generator X1



2577394

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-928-405-714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

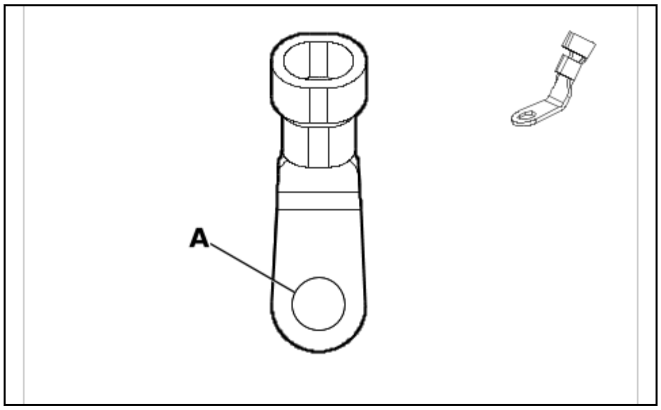
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G13 Generator X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 25	(1) Charge Indicator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) Generator Field Duty Cycle Signal	(2) I	(2) —

G13 Generator X2



6285975

Connector Part Information
- Harness Type: Battery Negative Cable
- OEM Connector: 23385196
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

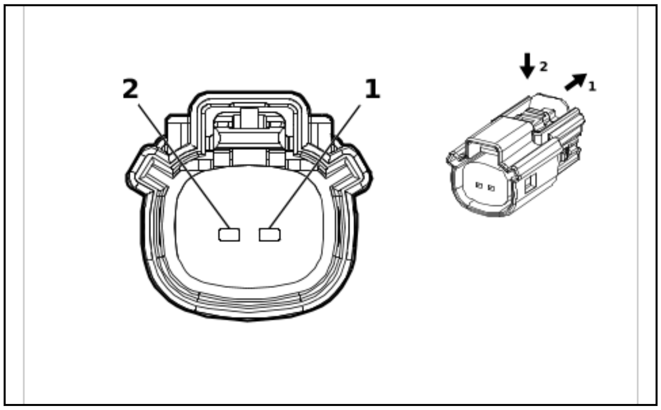
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

G13 Generator X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

G18 Fuel Pump - High Pressure



2474713

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 33471-0206
- Service Connector: 13577534
- Description: 2-Way F 1.5 Series, Sealed(BK)

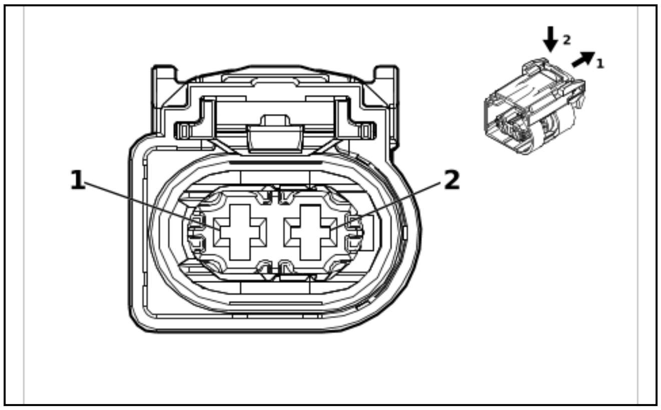
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

G18 Fuel Pump - High Pressure

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / BK	(1) 7300	(1) High Pressure Fuel Pump Low Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 7301	(2) High Pressure Fuel Pump High Control	(2) I	(2) —

G24 Windshield Washer Pump



5580410

Connector Part Information

- Harness Type: Windshield Washer Pump Extension Wiring Harness
- OEM Connector: 2425741-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

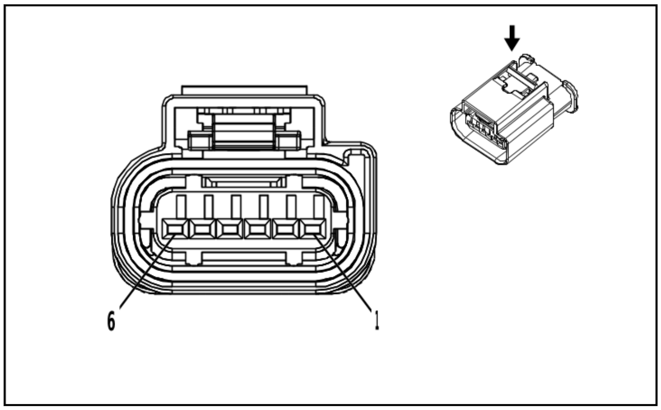
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	No Tool Required	No Tool Required

G24 Windshield Washer Pump

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75 (1) 0.75 (1) 0.75	(1) GY / VT (1) GY / VT (1) GY / VT	(1) 228 (1) 228 (1) 228	(1) Windshield Washer Pump Control (1) Windshield Washer Pump Control (1) Windshield Washer Pump Control	(1) II (1) II (1) I	(1) — (1) UXA (1) - UXA
(2) 2	(2) 0.75 (2) 0.75 (2) 0.75	(2) BK (2) GY / VT (2) BK	(2) 2250 (2) 228 (2) 2250	(2) Ground (2) Windshield Washer Pump Control (2) Ground	(2) II (2) II (2) I	(2) — (2) UXA (2) - UXA

G58 Evaporative Emission Canister Purge Pump



3747579

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-1
- Service Connector: 19354437
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

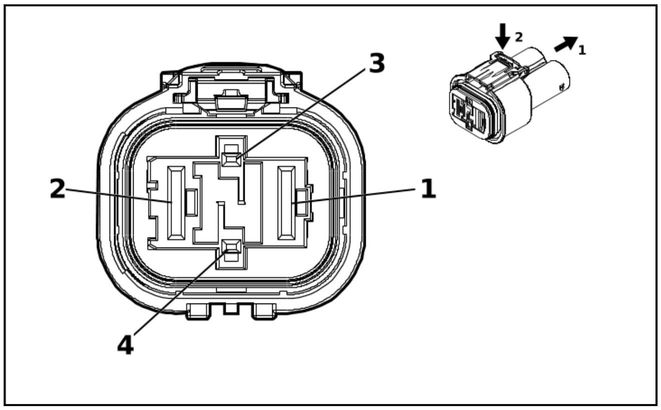
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G58 Evaporative Emission Canister Purge Pump

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BU	(1) 2447	(1) Evaporative Purge Pump Pressure Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / BN	(4) 2732	(4) Engine Control Module LIN Bus 4	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK	(5) 550	(5) Ground	(5) I	(5) —
(6) 6	(6) 0.5	(6) VT / BU	(6) 5294	(6) Powertrain Main Relay Fused Supply Voltage 5	(6) I	(6) —

G59 Engine Coolant Pump



5389785

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2332470-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2, 9.5 MCON Series(BK)

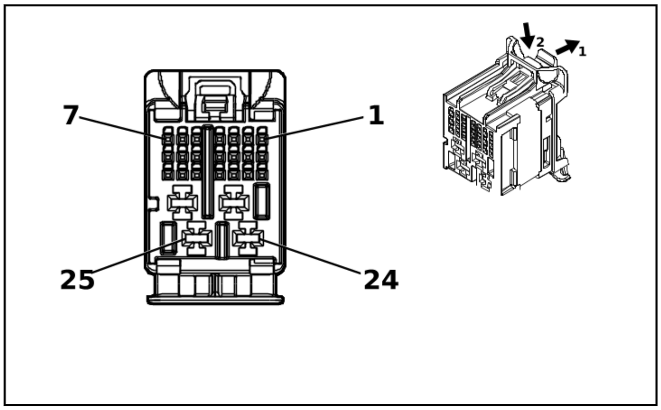
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G59 Engine Coolant Pump

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 10	(1) RD / YE	(1) 442	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 10	(2) BK	(2) 6550	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / BN	(3) 2732	(3) Engine Control Module LIN Bus 4	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

K9 Body Control Module X1



5203995

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0013
- Service Connector: 13534967
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(BK with GY Inner Connector)

Terminal Part Information

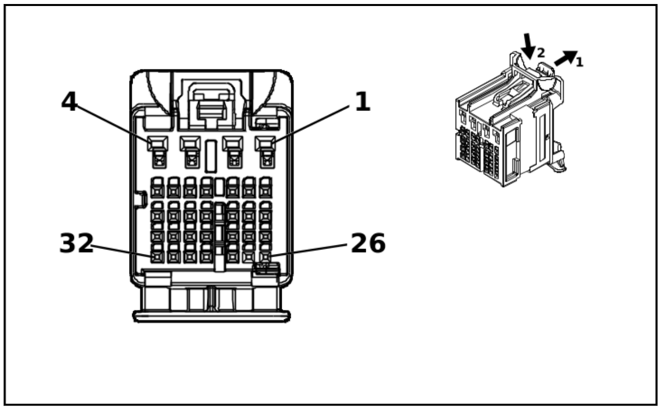
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K9 Body Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / GY	(5) 754	(5) Blower Motor Speed Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH / YE	(6) 4634	(6) HVAC Remote Enable Signal	(6) I	(6) —
7 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GY / GN	(11) 4636	(11) HVAC System Enable Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 728	(12) Security Indicator Control	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) GN / VT	(14) 4759	(14) Transmission Shift Lever Position Indicator 2 Control	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY	(15) 590	(15) Driver Solar Sensor Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) GY	(16) 6137	(16) Air Conditioning Evaporator Temperature Sensor Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) WH / BU	(17) 278	(17) Ambient Light Sensor Signal	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / WH	(18) 734	(18) Inside Air Temperature Sensor Signal	(18) I	(18) —
19	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(20) 20	(20) 0.35	(20) GN / VT	(20) 2852	(20) Body Control Module LIN Bus 6	(20) I	(20) —
21 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 1	(23) RD / GY	(23) 2840	(23) Battery Positive Voltage	(23) II	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 1	(25) RD / GY	(25) 2140	(25) Battery Positive Voltage	(25) II	(25) —

K9 Body Control Module X2



5204222

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0015
- Service Connector: 13534980
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(PK with GY Inner Connector)

Terminal Part Information

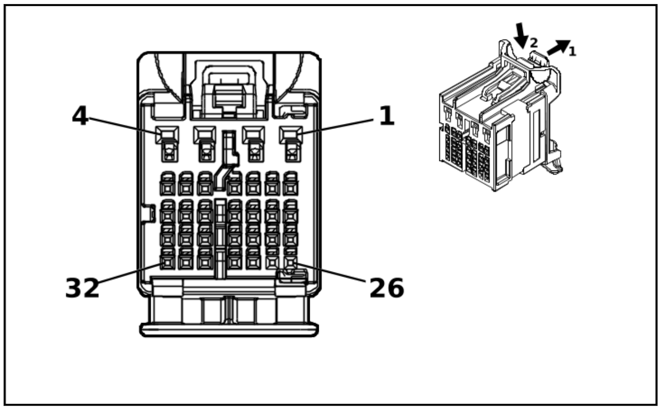
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 157	(1) Interior Lamp Control	(1) II	(1) —
2 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / GN	(5) 5723	(5) Ignition Mode Switch Mode Voltage	(5) I	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) GN / BU	(9) 3738	(9) Tap Up/Tap Down Switch Signal 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) WH / BN	(10) 2203	(10) Enhanced Driver Mode 2 Switch Signal	(10) I	(10) —
11	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(12) 12	(12) 0.35	(12) YE / BU	(12) 1714	(12) Windshield Wiper Switch Low Signal	(12) I	(12) —
(13) 13	(13) 0.35	(13) BN / GN	(13) 11875	(13) Cruise Control Bank 2 Switch Signal	(13) I	(13) —
(14) 14	(14) 0.35	(14) GY / GN	(14) 11874	(14) Cruise Control Bank 1 Switch Signal	(14) I	(14) —
15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) BN / BK	(16) 5720	(16) Ignition Mode Switch Accessory LED Signal	(16) I	(16) —
17 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) VT / BU	(23) 2916	(23) Right Turn Signal Switch Signal	(23) I	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.35	(25) BK / GY	(25) 6009	(25) Windshield Wiper Switch Low Reference	(25) I	(25) —
(26) 26	(26) 0.35	(26) WH / BK	(26) 94	(26) Windshield Washer Switch Signal	(26) I	(26) —
(27) 27	(27) 0.35	(27) YE / BN	(27) 307	(27) Headlamp Switch Flash Signal	(27) I	(27) —
(28) 28	(28) 0.35	(28) GN / WH	(28) 3287	(28) Horn Switch Signal	(28) I	(28) —
(29) 29	(29) 0.35	(29) WH / GN	(29) 2915	(29) Left Turn Signal Switch Signal	(29) I	(29) —
(30) 30	(30) 0.35	(30) BK / YE	(30) 407	(30) Sensor Low Reference	(30) I	(30) —
(31) 31	(31) 0.35	(31) GN / WH	(31) 111	(31) Hazard Warning Switch Signal	(31) I	(31) —
(32) 32	(32) 0.35	(32) WH	(32) 524	(32) High Beam Select Switch High Beam Signal	(32) I	(32) —

K9 Body Control Module X3



5203925

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0012
- Service Connector: 13534977
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BU with GY Inner Connector)

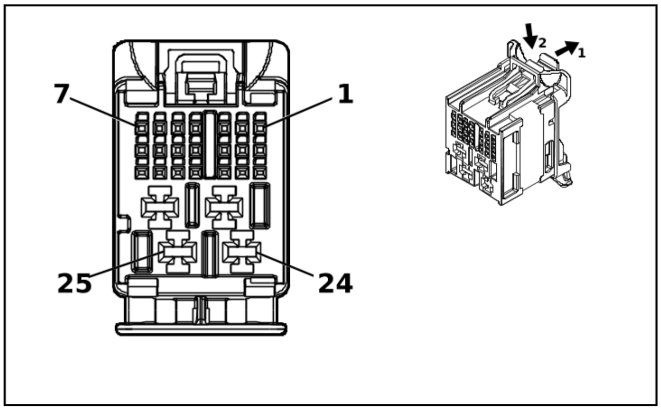
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A
III	Not required	No Tool Required	No Tool Required

K9 Body Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) WH / BN	(3) 6815	(3) Inadvertent Load Control	(3) II	(3) —
4 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) YE / GY	(9) 44	(9) Instrument Panel Lamp Dimmer Switch Signal	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / BK	(10) 2858	(10) Body Control Module LIN Bus 12	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.35	(12) VT / BK	(12) 7553	(12) Park Lock Solenoid Actuator Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) WH	(13) 3152	(13) Lane Departure Warning Indicator Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) GN	(15) 1110	(15) Stop/Start Indicator Control	(15) I	(15) —
(16) 16	(16) 0.35	(16) GN / BU	(16) 761	(16) Blower Speed Feedback Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) WH / VT	(17) 5905	(17) Key Capture/Column Lock Shift Position Signal	(17) I	(17) —
(18) 18	(18) 0.35	(18) BK / YE	(18) 5005	(18) Instrument Panel Lamp Dimmer Switch Low Reference	(18) I	(18) —
(19) 19	(19) 0.35	(19) BU / BK	(19) 5719	(19) Ignition Mode Switch Start LED Signal	(19) I	(19) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) BU	(23) 1111	(23) Stop/Start Switch Signal	(23) I	(23) —
(24) 24	(24) 0.35	(24) WH / BU	(24) 3691	(24) Trailer Brake Apply Signal	(24) III	(24) —
(25) 25	(25) 0.35	(25) GY	(25) 4989	(25) Driver Mode 2 Switch Signal	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.35	(27) GY / WH	(27) 3153	(27) Lane Departure Warning Disable Switch Signal	(27) I	(27) —
28 - 32	—	—	—	Not Occupied	—	—

K9 Body Control Module X4



5203893

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0018
- Service Connector: 13534970
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(GY)

Terminal Part Information

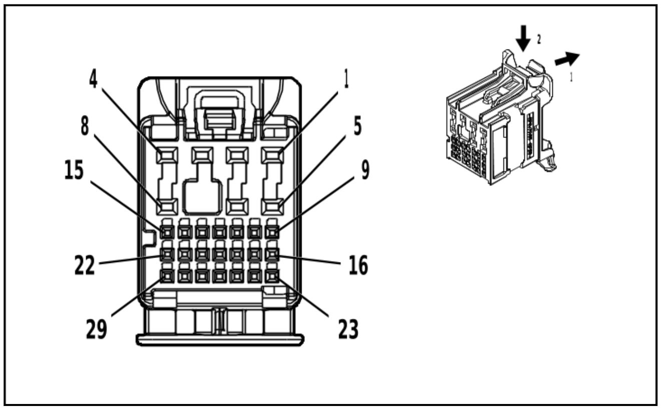
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K9 Body Control Module X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 3552	(1) Interior Passive Entry Antenna 1 High Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 3553	(2) Interior Passive Entry Antenna 1 Low Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / VT	(3) 1449	(3) Steering Wheel Resistor Ladder Low Reference	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) GN / VT	(5) 5199	(5) Run/Crank Relay Coil Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BN / BK	(7) 4996	(7) Immobilizer Antenna Signal [+]	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) GY / GN	(10) 4083	(10) Retained Accessory Power Relay 2 Coil Control	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY / GN	(11) 328	(11) Interior Lamp Defeat Switch Signal	(11) I	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) GY	(13) 156	(13) Courtesy Lamp Switch Signal	(13) I	(13) —
(14) 14	(14) 0.35	(14) WH / GY	(14) 4997	(14) Immobilizer Antenna Low Signal	(14) I	(14) —
15	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(16) 16	(16) 0.35	(16) GN / WH	(16) 4115	(16) Body Control Module LIN Bus 5	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) BU / GN	(19) 4103	(19) AUTOSAR CAN Bus [+] 9 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) WH / GN	(20) 4102	(20) AUTOSAR CAN Bus [-] 9 Serial Data	(20) I	(20) —
(21) 21	(21) 0.35	(21) WH	(21) 6816	(21) Indicator Dimming Control	(21) I	(21) —
(22) 22	(22) 0.75	(22) RD / WH	(22) 2740	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 2	(23) RD / BU	(23) 2540	(23) Battery Positive Voltage	(23) II	(23) —
(24) 24	(24) 2	(24) BK	(24) 2050	(24) Ground	(24) II	(24) —
(25) 25	(25) 2	(25) BK	(25) 2050	(25) Ground	(25) II	(25) —

K9 Body Control Module X5



4584346

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series(GN)

Terminal Part Information

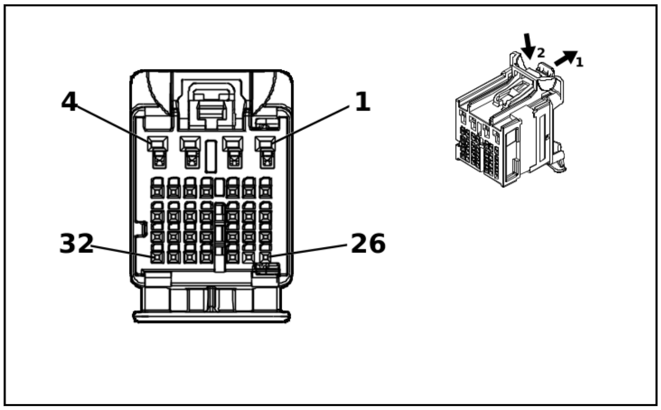
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) II	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BU / YE	(3) 7574	(3) Air Conditioning Compressor Solenoid Valve Control	(3) II	(3) —
(4) 4	(4) 0.75	(4) WH	(4) 2679	(4) Lock Actuators Unlock Control 1	(4) II	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) YE	(6) 6817	(6) LED Backlight Dimming Control 1	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GY	(8) 2681	(8) Left Front Door Lock Actuator Lock Control	(8) II	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) BN / WH	(11) 28	(11) Horn Relay Control	(11) I	(11) —
(12) 12	(12) 0.35	(12) WH / GN	(12) 4102	(12) AUTOSAR CAN Bus [-] 9 Serial Data	(12) I	(12) —
(13) 13	(13) 0.35	(13) BU / GN	(13) 4103	(13) AUTOSAR CAN Bus [+] 9 Serial Data	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) VT	(16) 4301	(16) Passive Entry Left Antenna Signal High	(16) I	(16) —
(17) 17	(17) 0.35	(17) GN / YE	(17) 2855	(17) Body Control Module LIN Bus 9	(17) I	(17) —
(18) 18	(18) 0.35	(18) VT / GY	(18) 126	(18) Left Front Door Open Switch Signal	(18) I	(18) —
(19) 19	(19) 0.35	(19) GN / YE	(19) 6134	(19) Body Control Module LIN Bus 3	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) WH / BU	(21) 6311	(21) Cruise/ETC/TCC Brake Signal	(21) I	(21) —
(22) 22	(22) 0.35	(22) BN / VT	(22) 193	(22) Rear Defogger Relay Control	(22) I	(22) —
(23) 23	(23) 0.35	(23) VT / GY	(23) 4302	(23) Passive Entry Left Antenna Signal Low	(23) I	(23) —
(24) 24	(24) 0.35	(24) WH	(24) 5359	(24) Brake Apply Sensor Control	(24) I	(24) —
(25) 25	(25) 0.35	(25) BU / YE	(25) 5361	(25) Brake Apply Sensor Signal	(25) I	(25) —
(26) 26	(26) 0.35	(26) BK / BN	(26) 5360	(26) Brake Apply Sensor Low Reference	(26) I	(26) —
27 - 29	—	—	—	Not Occupied	—	—

K9 Body Control Module X6



5202291

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0017
- Service Connector: 13534981
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series(BN with GY Inner Connector)

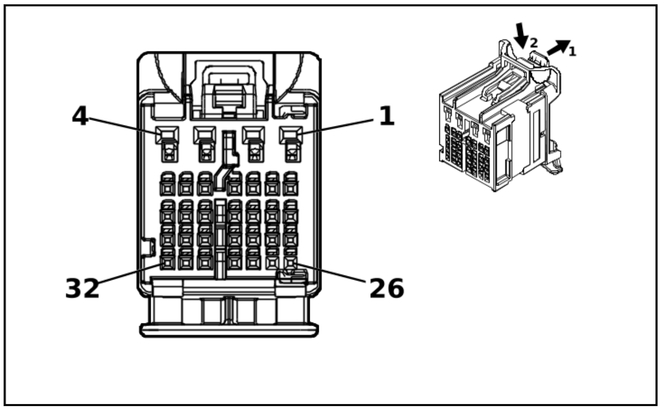
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X6

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.75	(2) VT / WH	(2) 1094	(2) Right Rear Door Lock Actuator Lock Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) GY / BK	(3) 2680	(3) Lock Actuators Unlock Control 2	(3) II	(3) —
4 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GN / BU	(11) 6133	(11) Body Control Module LIN Bus 2	(11) I	(11) —
12 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.35	(22) BN / GN	(22) 4064	(22) Hood Status B Signal	(22) I	(22) —
23 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) BU	(28) 2675	(28) Left Front Exterior Door Handle Switch Unlock Signal	(28) I	(28) —
29 - 32	—	—	—	Not Occupied	—	—

K9 Body Control Module X7



5202294

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0014
- Service Connector: 13534979
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series(PU with GY Inner Connector)

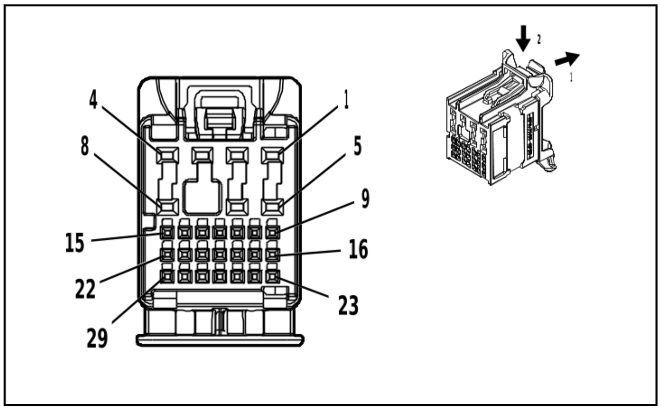
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58

K9 Body Control Module X7

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) GN / VT	(19) 2857	(19) Body Control Module LIN Bus 11	(19) I	(19) —
20 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.35	(30) BU / YE	(30) 7176	(30) All Windows Open Switch Signal	(30) I	(30) —
31 - 32	—	—	—	Not Occupied	—	—

K9 Body Control Module X8



4578560

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(DK-GY with GY Inner Connector)

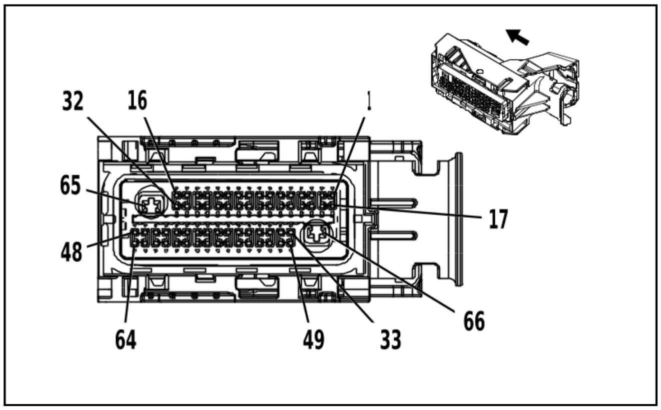
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X8

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2691	(1) Rear Closure Actuator Lock Control	(1) II	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) BU / YE	(3) 1091	(3) Left Rear Door Lock Actuator Lock Control	(3) II	(3) —
(4) 4	(4) 0.75	(4) YE / GN	(4) 2682	(4) Right Front Door Lock Actuator Lock Control	(4) II	(4) —
5 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) GN / BK	(9) 4304	(9) Passive Entry Right Antenna Signal Low	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / YE	(10) 4303	(10) Passive Entry Right Antenna Signal High	(10) I	(10) —
11 - 16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.35	(17) GN / YE	(17) 2862	(17) Body Control Module LIN Bus 16	(17) I	(17) —
(18) 18	(18) 0.35	(18) GN / WH	(18) 2854	(18) Body Control Module LIN Bus 8	(18) I	(18) —
19 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) GY / VT	(28) 2676	(28) Right Front Door Exterior Switch Unlock Signal	(28) I	(28) —
(29) 29	(29) 0.35	(29) GN / GY	(29) 6135	(29) Body Control Module LIN Bus 4	(29) I	(29) —

K20 Engine Control Module X1



4504420

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34822-0953
- Service Connector: 85786016
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

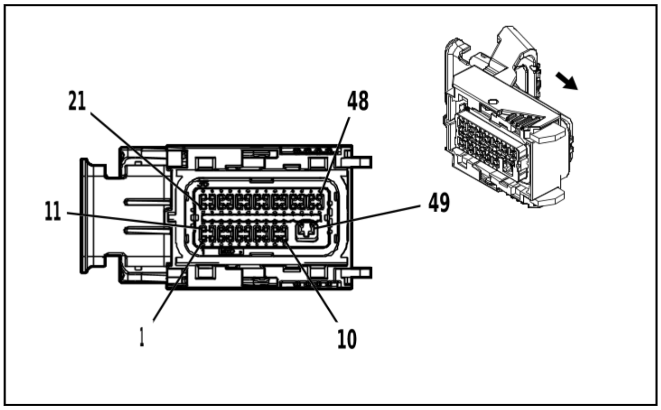
K20 Engine Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 5991	(1) Powertrain Relay Coil Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / BK	(2) 625	(2) Starter Enable Relay Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 4325	(3) Starter Pinion Solenoid Actuator Relay Control	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / GY	(6) 3615	(6) Intake Camshaft Profile Actuator 1 Control A	(6) II	(6) —
(7) 7	(7) 0.5	(7) GN / BK	(7) 3616	(7) Intake Camshaft Profile Actuator 1 Control B	(7) II	(7) —
(8) 8	(8) 0.5	(8) GN	(8) 3585	(8) Intake Camshaft Profile Actuator 2 Control A	(8) II	(8) —
(9) 9	(9) 0.5	(9) BU	(9) 3584	(9) Intake Camshaft Profile Actuator 2 Control B	(9) II	(9) —
(10) 10	(10) 0.5	(10) YE / BU	(10) 3587	(10) Intake Camshaft Profile Actuator 3 Control A	(10) II	(10) —
(11) 11	(11) 0.5	(11) GY	(11) 3586	(11) Intake Camshaft Profile Actuator 3 Control B	(11) II	(11) —
(12) 12	(12) 0.5	(12) BU / WH	(12) 3589	(12) Intake Camshaft Profile Actuator 1 Position Sensor Signal	(12) II	(12) —
(13) 13	(13) 0.5	(13) GN / WH	(13) 3592	(13) Intake Camshaft Profile Actuator 2 Position Sensor Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) BK / GN	(14) 3593	(14) Intake Camshaft Profile Actuator 3 Position Sensor Signal	(14) II	(14) —
15	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(16) 16	(16) 0.75	(16) VT / BU	(16) 5291	(16) Powertrain Main Relay Fused Supply Voltage 2	(16) II	(16) —
(17) 17	(17) 0.5	(17) GN / GY	(17) 465	(17) Fuel Pump Primary Relay Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) WH / GY	(18) 459	(18) Air Conditioning Compressor Clutch Relay Control	(18) II	(18) —
19 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.5	(22) GN / YE	(22) 1402	(22) Intake Camshaft Profile Actuator 4 Control A	(22) II	(22) —
(23) 23	(23) 0.5	(23) GY / YE	(23) 1502	(23) Intake Camshaft Profile Actuator 4 Control B	(23) II	(23) —
(24) 24	(24) 0.5	(24) YE / VT	(24) 6265	(24) Exhaust Camshaft Profile Actuator 2 Control B	(24) II	(24) —
(25) 25	(25) 0.5	(25) VT / BK	(25) 6264	(25) Exhaust Camshaft Profile Actuator 2 Control A	(25) II	(25) —
(26) 26	(26) 0.5	(26) GY / BN	(26) 6262	(26) Exhaust Camshaft Profile Actuator 3 Control B	(26) II	(26) —
(27) 27	(27) 0.5	(27) GN / BN	(27) 6261	(27) Exhaust Camshaft Profile Actuator 3 Control A	(27) II	(27) —
(28) 28	(28) 0.5	(28) YE / BN	(28) 1702	(28) Intake Camshaft Profile Actuator 4 Position Sensor Signal	(28) II	(28) —
(29) 29	(29) 0.5	(29) GN / BK	(29) 6266	(29) Exhaust Camshaft Profile Actuator 2 Position Sensor Signal	(29) II	(29) —
(30) 30	(30) 0.5	(30) YE	(30) 6263	(30) Exhaust Camshaft Profile Actuator 3 Position Sensor Signal	(30) II	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) VT / GY	(32) 139	(32) Run/Crank Ignition 1 Voltage	(32) II	(32) —
(33) 33	(33) 0.5	(33) BK / BU	(33) 1271	(33) Accelerator Pedal Position Low Reference 1	(33) II	(33) —
(34) 34	(34) 0.5	(34) YE / WH	(34) 3746	(34) Camshaft Exhaust Lobe Axial Position Signal 1	(34) II	(34) —
(35) 35	(35) 0.5	(35) BK / VT	(35) 1272	(35) Accelerator Pedal Position Low Reference 2	(35) II	(35) —
(36) 36	(36) 0.5	(36) YE / GN	(36) 3747	(36) Camshaft Exhaust Lobe Axial Position Signal 2	(36) II	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 0.5	(38) YE	(38) 4063	(38) Hood Status A Signal	(38) II	(38) —
(39) 39	(39) 0.5	(39) YE / WH	(39) 1161	(39) Accelerator Pedal Position Signal 1	(39) II	(39) —
40 - 41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) GN / BN	(42) 2732	(42) Engine Control Module LIN Bus 4	(42) II	(42) —
43 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) BU / GY	(45) 4054	(45) Private Serial Data Powertrain CAN Bus [-] Serial Data	(45) II	(45) —
(46) 46	(46) 0.5	(46) WH	(46) 4055	(46) Private Serial Data Powertrain CAN Bus [+] Serial Data	(46) II	(46) —
(47) 47	(47) 0.5	(47) BU	(47) 492	(47) Mass Air Flow Sensor Signal	(47) II	(47) —
(48) 48	(48) 0.5	(48) RD / WH	(48) 140	(48) Battery Positive Voltage	(48) II	(48) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(49) 49	(49) 0.5	(49) WH / RD	(49) 1164	(49) Accelerator Pedal Position 5V Reference 1	(49) II	(49) —
(50) 50	(50) 0.5	(50) VT / WH	(50) 3744	(50) Camshaft Intake Lobe Axial Position Signal 1	(50) II	(50) —
(51) 51	(51) 0.5	(51) BN / RD	(51) 1274	(51) Accelerator Pedal Position 5V Reference 2	(51) II	(51) —
(52) 52	(52) 0.5	(52) VT / GN	(52) 3745	(52) Camshaft Intake Lobe Axial Position Signal 2	(52) II	(52) —
(53) 53	(53) 0.5	(53) BU / GY	(53) 636	(53) Ambient Air Temperature Sensor Signal	(53) II	(53) —
54	—	—	—	Not Occupied	—	—
(55) 55	(55) 0.5	(55) GN	(55) 380	(55) Air Conditioning Refrigerant Pressure Sensor Signal	(55) II	(55) —
(56) 56	(56) 0.5	(56) WH / GN	(56) 5380	(56) Brake Position Sensor Signal	(56) II	(56) —
(57) 57	(57) 0.5	(57) GN / WH	(57) 1162	(57) Accelerator Pedal Position Signal 2	(57) II	(57) —
58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) WH	(59) 4978	(59) AUTOSAR CAN Bus [-] 2 Serial Data	(59) II	(59) —
(60) 60	(60) 0.5	(60) BU / YE	(60) 4979	(60) AUTOSAR CAN Bus [+] 2 Serial Data	(60) II	(60) —
61 - 62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) WH	(63) 4976	(63) AUTOSAR CAN Bus [-] 3 Serial Data	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / BK	(64) 4977	(64) AUTOSAR CAN Bus [+] 3 Serial Data	(64) II	(64) —
(65) 65	(65) 2.5	(65) BK / WH	(65) 151	(65) Signal Ground	(65) I	(65) —
(66) 66	(66) 2	(66) VT / BU	(66) 5290	(66) Powertrain Main Relay Fused Supply Voltage 1	(66) I	(66) —

K20 Engine Control Module X2



4596458

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34576-9493
- Service Connector: 85786015
- Description: 49-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

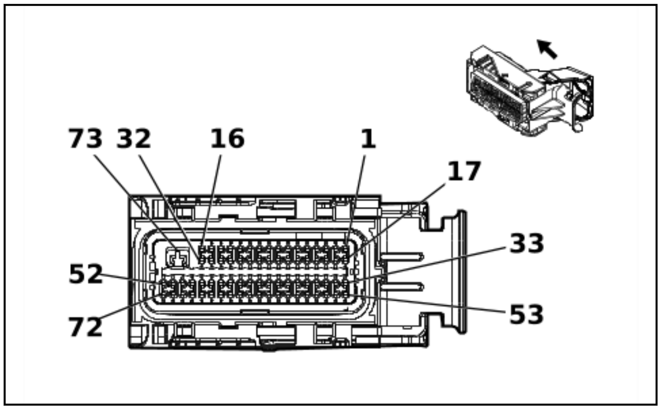
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K20 Engine Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU / RD	(2) 460	(2) Engine Control Sensors 5 Volt Reference 1	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BN / BU	(5) 2447	(5) Evaporative Purge Pump Pressure Signal	(5) II	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) VT / BU	(9) 5294	(9) Powertrain Main Relay Fused Supply Voltage 5	(9) II	(9) —
(10) 10	(10) 0.5	(10) BU / GY	(10) 2978	(10) Coolant Diverter Valve Position Signal	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) Engine Control Sensors Low Reference 2	(12) II	(12) —
13 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) GN / BK	(15) 3337	(15) Transmission Internal Mode Switch Mode Control Y	(15) II	(15) —
(16) 16	(16) 0.5	(16) YE / BN	(16) 331	(16) Oil Pressure Sensor Signal	(16) II	(16) —
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.5	(19) BU / WH	(19) 2918	(19) Fuel Rail Pressure Sensor Signal	(19) II	(19) —
(20) 20	(20) 0.5	(20) WH	(20) 2590	(20) Turbocharger Wastegate Motor Feedback Signal	(20) II	(20) —
21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.5	(22) BK / GY	(22) 626	(22) Engine Control Vehicle Sensors Low Reference 1	(22) II	(22) —
(23) 23	(23) 0.5	(23) VT	(23) 7485	(23) Engine Oil Temperature Sensor 2 Signal	(23) II	(23) —
(24) 24	(24) 0.5	(24) BN / BU	(24) 357	(24) Oil Temperature Sensor Signal	(24) II	(24) —
(25) 25	(25) 0.5	(25) YE / WH	(25) 3200	(25) Throttle Inlet Absolute Pressure Sensor Signal	(25) II	(25) —
26 - 28	—	—	—	Not Occupied	—	—
(29) 29	(29) 0.5	(29) YE / GY	(29) 3926	(29) Crankcase Differential Pressure Sensor Signal	(29) II	(29) —
30	—	—	—	Not Occupied	—	—
(31) 31	(31) 0.5	(31) YE / GY	(31) 6936	(31) HO2S Signal	(31) II	(31) —
(32) 32	(32) 0.5	(32) BN	(32) 6934	(32) HO2S Ground	(32) II	(32) —
(33) 33	(33) 0.5	(33) GN / YE	(33) 4623	(33) Engine Control Module LIN Bus 3	(33) II	(33) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(34) 34	(34) 0.5	(34) GY / WH	(34) 3113	(34) HO2S Heater Low Control Bank 1 Sensor 1	(34) II	(34) —
35	—	—	—	Not Occupied	—	—
(36) 36	(36) 0.5	(36) WH / RD	(36) 480	(36) Engine Control Vehicle Sensors 5 Volt Reference 1	(36) II	(36) —
(37) 37	(37) 0.5	(37) YE / BK	(37) 3000	(37) Coolant Temperature Sensor 2 Signal	(37) II	(37) —
38 - 39	—	—	—	Not Occupied	—	—
(40) 40	(40) 0.5	(40) GY / VT	(40) 2404	(40) Engine Block Coolant Temperature Signal	(40) II	(40) —
41 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) GN	(45) 6935	(45) HO2S Pump Current Trim Signal	(45) II	(45) —
(46) 46	(46) 0.5	(46) BN / WH	(46) 6933	(46) HO2S Pump Current Signal	(46) II	(46) —
(47) 47	(47) 0.75	(47) GN / VT	(47) 4621	(47) Engine Control Module LIN Bus 1	(47) II	(47) —
(48) 48	(48) 0.5	(48) GN / WH	(48) 4622	(48) Engine Control Module LIN Bus 2	(48) II	(48) —
(49) 49	(49) 2.5	(49) BK / WH	(49) 151	(49) Signal Ground	(49) I	(49) —

K20 Engine Control Module X3



1650395

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34566-9393
- Service Connector: 85761016
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed(BK with GY Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19354746	J-35616-64B (L-BU)	J-38125-213

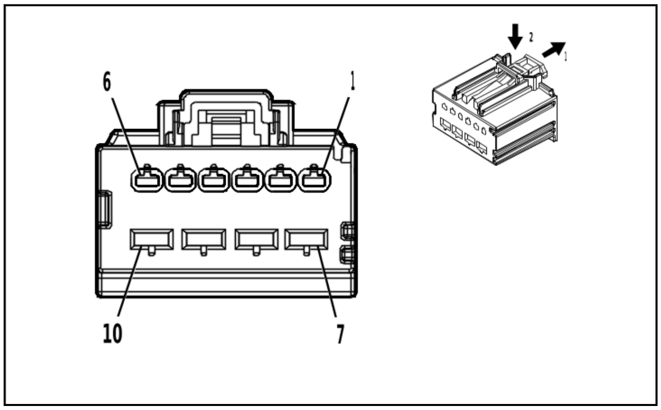
K20 Engine Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) GN	(2) 3060	(2) Turbocharger Bypass Solenoid Valve Control Bank 1	(2) II	(2) —
(3) 3	(3) 0.5	(3) BN	(3) 25	(3) Charge Indicator Control	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / BU	(6) 6270	(6) Crankshaft Position Sensor Voltage	(6) II	(6) —
(7) 7	(7) 0.5	(7) BN / RD	(7) 2701	(7) Throttle Position Sensor 5V Reference	(7) II	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) GN / WH	(9) 432	(9) Manifold Absolute Pressure Sensor Signal	(9) II	(9) —
(10) 10	(10) 0.5	(10) BN	(10) 3120	(10) HO2S High Signal Bank 1 Sensor 2	(10) II	(10) —
(11) 11	(11) 0.5	(11) WH / YE	(11) 3121	(11) HO2S Low Signal Bank 1 Sensor 2	(11) II	(11) —
(12) 12	(12) 0.5	(12) VT / BN	(12) 5284	(12) Intake Camshaft Position Actuator Solenoid Valve 1	(12) II	(12) —
(13) 13	(13) 0.5	(13) GY / BU	(13) 5282	(13) Exhaust Camshaft Position Actuator Solenoid Valve 1	(13) II	(13) —
(14) 14	(14) 0.5	(14) BU	(14) 2976	(14) Coolant Diverter Valve Actuator Control Open	(14) II	(14) —
(15) 15	(15) 0.75	(15) WH / BN	(15) 2591	(15) Turbocharger Wastegate Motor Open Control	(15) II	(15) —
(16) 16	(16) 0.75	(16) WH / BU	(16) 2592	(16) Turbocharger Wastegate Motor Close Control	(16) II	(16) —
17 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) BK / YE	(21) 548	(21) Engine Control Sensors Low Reference 1	(21) II	(21) —
(22) 22	(22) 0.5	(22) BK / VT	(22) 6272	(22) Crankshaft Position Sensor Low Reference	(22) II	(22) —
(23) 23	(23) 0.5	(23) BK / BN	(23) 2752	(23) Throttle Position Sensor Low Reference	(23) II	(23) —
(24) 24	(24) 0.5	(24) VT	(24) 2988	(24) Engine Outlet Coolant Temperature Signal	(24) II	(24) —
(25) 25	(25) 0.5	(25) YE / BU	(25) 2408	(25) Engine Inlet Coolant Temperature Signal	(25) II	(25) —
(26) 26	(26) 0.5	(26) WH / BU	(26) 7329	(26) Pre-Throttle Air Temperature Signal	(26) II	(26) —
(27) 27	(27) 0.5	(27) BU / YE	(27) 8938	(27) Engine Integrated Exhaust Manifold Temperature Signal	(27) II	(27) —
(28) 28	(28) 0.5	(28) BK / BN	(28) 6753	(28) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(28) II	(28) —
(29) 29	(29) 0.5	(29) BK / VT	(29) 6754	(29) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(29) II	(29) —
(30) 30	(30) 0.5	(30) YE	(30) 581	(30) Throttle Actuator Open Control	(30) II	(30) —
(31) 31	(31) 0.5	(31) BN / WH	(31) 582	(31) Throttle Actuator Close Control	(31) II	(31) —
(32) 32	(32) 0.5	(32) BU / BN	(32) 2977	(32) Coolant Diverter Valve Actuator Control Close	(32) II	(32) —
(33) 33	(33) 0.5	(33) VT / GY	(33) 496	(33) Knock Sensor 1 Signal	(33) II	(33) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(34) 34	(34) 0.5	(34) WH / GY	(34) 1876	(34) Knock Sensor 2 Signal	(34) II	(34) —
(35) 35	(35) 0.5	(35) BK / GN	(35) 469	(35) Manifold Absolute Pressure Sensor Low Reference	(35) II	(35) —
(36) 36	(36) 0.5	(36) GN / BU	(36) 428	(36) EVAP Canister Purge Solenoid Control	(36) II	(36) —
37 - 38	—	—	—	Not Occupied	—	—
(39) 39	(39) 0.5	(39) BK / GN	(39) 5301	(39) Intake Camshaft Position Sensor Low Reference 1	(39) II	(39) —
(40) 40	(40) 0.5	(40) BK / GY	(40) 5296	(40) Exhaust Camshaft Position Sensor Low Reference 1	(40) II	(40) —
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) VT / BK	(42) 5273	(42) Exhaust Camshaft Position Sensor 1	(42) II	(42) —
(43) 43	(43) 0.5	(43) GN	(43) 6271	(43) Crankshaft Position Sensor Signal	(43) II	(43) —
(44) 44	(44) 0.75	(44) YE / BU	(44) 2124	(44) Ignition Control 4	(44) II	(44) —
(45) 45	(45) 0.75	(45) BU / WH	(45) 2122	(45) Ignition Control 2	(45) II	(45) —
(46) 46	(46) 0.75	(46) BK / BU	(46) 2129	(46) Ignition Control Low Reference Bank 1	(46) II	(46) —
(47) 47	(47) 0.5	(47) GY / WH	(47) 3122	(47) HO2S Heater Low Control Bank 1 Sensor 2	(47) II	(47) —
(48) 48	(48) 0.5	(48) BU / WH	(48) 3630	(48) Throttle Position Sensor SENT 1 Signal	(48) II	(48) —
(49) 49	(49) 0.75	(49) BU / WH	(49) 4904	(49) Direct Fuel Injector High Voltage Supply Cylinder 4	(49) II	(49) —
(50) 50	(50) 0.75	(50) GY / BU	(50) 4804	(50) Direct Fuel Injector High Voltage Control Cylinder 4	(50) II	(50) —
(51) 51	(51) 0.75	(51) BU / GY	(51) 4902	(51) Direct Fuel Injector High Voltage Supply Cylinder 2	(51) II	(51) —
(52) 52	(52) 0.75	(52) BU	(52) 4802	(52) Direct Fuel Injector High Voltage Control Cylinder 2	(52) II	(52) —
(53) 53	(53) 0.5	(53) BK / YE	(53) 1716	(53) Knock Sensor Low Reference 1	(53) II	(53) —
(54) 54	(54) 0.5	(54) BK / GY	(54) 2303	(54) Knock Sensor Low Reference 2	(54) II	(54) —
(55) 55	(55) 0.5	(55) GY / RD	(55) 2704	(55) Manifold Absolute Pressure Sensor 5V Reference	(55) II	(55) —
(56) 56	(56) 0.5	(56) YE / BN	(56) 106	(56) Oil Pump Motor Control	(56) II	(56) —
(57) 57	(57) 0.5	(57) BU	(57) 179	(57) Engine Oil Pump Control	(57) II	(57) —
58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) GY / BU	(59) 5300	(59) Intake Camshaft Position Sensor 1 Voltage Reference	(59) II	(59) —
(60) 60	(60) 0.5	(60) GY / YE	(60) 5297	(60) Exhaust Camshaft Position Sensor 1 Voltage Reference	(60) II	(60) —
(61) 61	(61) 0.5	(61) GY	(61) 23	(61) Generator Field Duty Cycle Signal	(61) II	(61) —
62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) YE / VT	(63) 5275	(63) Intake Camshaft Position Sensor 1	(63) II	(63) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(64) 64	(64) 0.75	(64) BU / VT	(64) 2121	(64) Ignition Control 1	(64) II	(64) —
(65) 65	(65) 0.75	(65) GN / BU	(65) 2123	(65) Ignition Control 3	(65) II	(65) —
66	—	—	—	Not Occupied	—	—
(67) 67	(67) 0.75	(67) VT / BK	(67) 7300	(67) High Pressure Fuel Pump Low Control	(67) II	(67) —
(68) 68	(68) 0.75	(68) YE	(68) 7301	(68) High Pressure Fuel Pump High Control	(68) II	(68) —
(69) 69	(69) 0.75	(69) BN / WH	(69) 4901	(69) Direct Fuel Injector High Voltage Supply Cylinder 1	(69) II	(69) —
(70) 70	(70) 0.75	(70) BN	(70) 4801	(70) Direct Fuel Injector High Voltage Control Cylinder 1	(70) II	(70) —
(71) 71	(71) 0.75	(71) GN / GY	(71) 4903	(71) Direct Fuel Injector High Voltage Supply Cylinder 3	(71) II	(71) —
(72) 72	(72) 0.75	(72) GN	(72) 4803	(72) Direct Fuel Injector High Voltage Control Cylinder 3	(72) II	(72) —
(73) 73	(73) 2	(73) VT / BU	(73) 5290	(73) Powertrain Main Relay Fused Supply Voltage 1	(73) I	(73) —

K29FV Front Seat Heater Vent Control Module X1 (KA1)



5035058

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

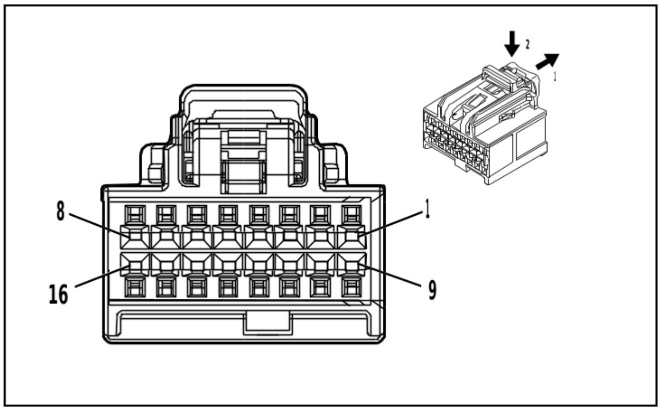
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

K29FV Front Seat Heater Vent Control Module X1 (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.75	(2) BN / BU	(2) 2479	(2) Passenger Seat Heating Element Control	(2) I	(2) —
(3) 3	(3) 0.75	(3) GY / BK	(3) 2480	(3) Passenger Seat Heating Element Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.75	(6) BN / VT	(6) 2077	(6) Driver Seat Heating Element Control	(6) I	(6) —
(7) 7	(7) 0.75	(7) RD / VT	(7) 4640	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 1.5	(8) BK	(8) 4250	(8) Ground	(8) II	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.75	(10) RD / BU	(10) 4540	(10) Battery Positive Voltage	(10) II	(10) —

K29FV Front Seat Heater Vent Control Module X2 (KA1)



4873243

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series(BK)

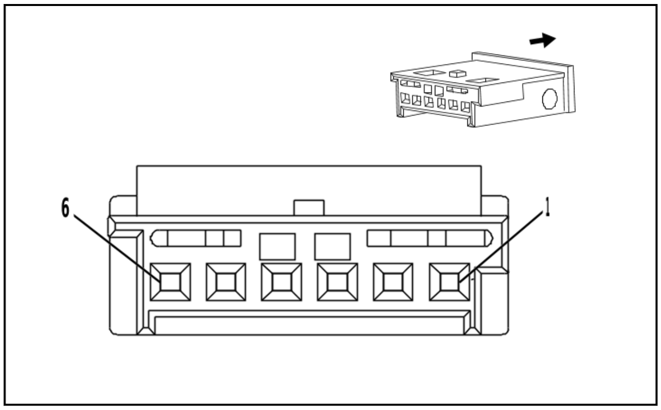
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K29FV Front Seat Heater Vent Control Module X2 (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 2080	(1) Driver Heated Seat Thermistor Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2435	(2) Passenger Heated Seat Thermistor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 2425	(3) Driver Seat Back Heating Temperature Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / BU	(4) 2436	(4) Passenger Seat Back Heating Temperature Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 2434	(5) Passenger Seat Heating Temperature Sensor Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 2079	(6) Driver Seat Heating Temperature Sensor Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) GN / VT	(8) 2857	(8) Body Control Module LIN Bus 11	(8) I	(8) —
(9) 9	(9) 0.5	(9) GN / VT	(9) 5906	(9) Driver Seat Blower Motor Control 1	(9) I	(9) —
(10) 10	(10) 0.5	(10) VT / WH	(10) 5908	(10) Passenger Seat Blower Motor Control 1	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) BK / GN	(12) 2482	(12) Passenger Heated Back Thermistor Low Reference	(12) I	(12) —
13 - 16	—	—	—	Not Occupied	—	—

K32 Heated Steering Wheel Module X1



1862024

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1-1241370-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Micro-Quadlock Series(BK)

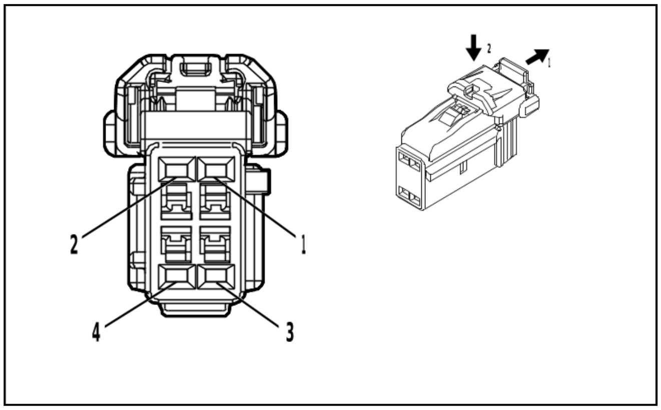
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K32 Heated Steering Wheel Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / GY	(1) 5883	(1) Steering Wheel Heating Switch Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / WH	(2) 5884	(2) Steering Wheel Heating Switch LED Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) RD / BN	(3) 40	(3) Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 50	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 51	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) GN / BK	(6) 2858	(6) Body Control Module LIN Bus 12	(6) I	(6) —

K32 Heated Steering Wheel Module X2



4872683

Connector Part Information
- Harness Type: Steering Wheel
- OEM Connector: 13517405
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series(BK)

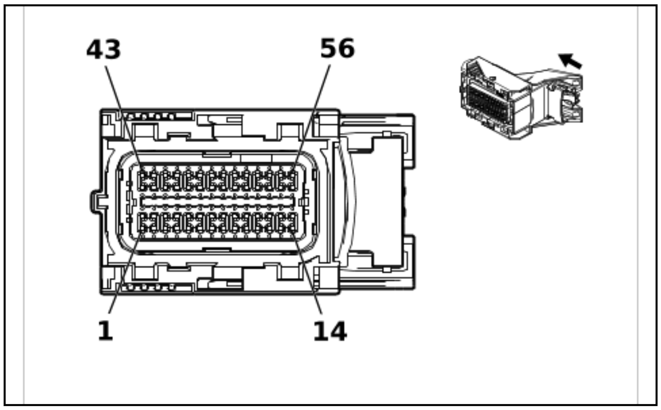
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K32 Heated Steering Wheel Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / YE	(1) 5888	(1) Steering Wheel Heating High Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / YE	(2) 5887	(2) Steering Wheel Heating Low Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) VT / BU	(3) 5886	(3) Steering Wheel Heating Temperature Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE / RD	(4) 5885	(4) Steering Wheel Heating Voltage Reference	(4) I	(4) —

K36 Restraints Control Module X1



5581812

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160099-0035
- Service Connector: 85090371
- Description: 56-Way F 0.64 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

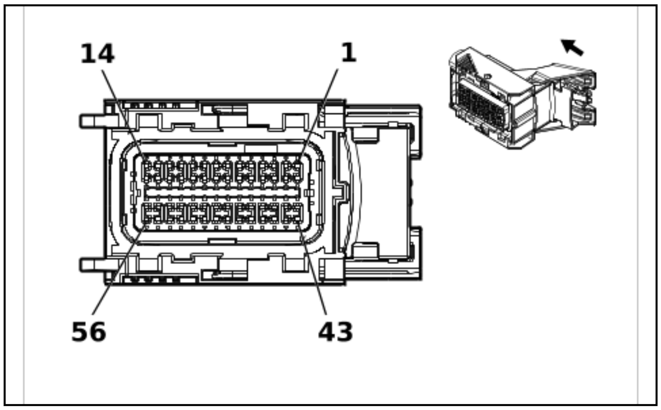
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354746	J-35616-64B (L-BU)	J-38125-213

K36 Restraints Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK / OG	(7) 5045	(7) Left Front Impact Discriminating Sensor Low Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG / YE	(8) 354	(8) Left Front Impact Discriminating Sensor Signal	(8) I	(8) —
(9) 9	(9) 0.5	(9) OG / GN	(9) 1409	(9) Right Front Impact Discriminating Sensor Signal	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK / OG	(10) 5600	(10) Right Front Impact Discriminating Sensor Low Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) WH / OG	(11) 3476	(11) Passenger Seat Belt Retractor Pretensioner Low Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) OG / GN	(12) 3475	(12) Passenger Seat Belt Retractor Pretensioner High Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) YE / OG	(13) 3025	(13) Passenger Instrument Panel Air Bag Stage 1 High Control	(13) I	(13) —
(14) 14	(14) 0.5	(14) OG / WH	(14) 3024	(14) Passenger Instrument Panel Air Bag Stage 1 Low Control	(14) I	(14) —
15 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.5	(25) VT / OG	(25) 3478	(25) Driver Seat Belt Retractor Pretensioner Low Control	(25) I	(25) —
(26) 26	(26) 0.5	(26) OG / WH	(26) 3477	(26) Driver Seat Belt Retractor Pretensioner High Control	(26) I	(26) —
(27) 27	(27) 0.5	(27) OG / VT	(27) 3021	(27) Steering Wheel Air Bag Stage 1 High Control	(27) I	(27) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(28) 28	(28) 0.5	(28) BN / OG	(28) 3020	(28) Steering Wheel Air Bag Stage 1 Low Control	(28) I	(28) —
(29) 29	(29) 0.35	(29) BU / GN	(29) 4103	(29) AUTOSAR CAN Bus [+] 9 Serial Data	(29) I	(29) —
(30) 30	(30) 0.35	(30) WH / GN	(30) 4102	(30) AUTOSAR CAN Bus [-] 9 Serial Data	(30) I	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) OG / BN	(32) 3479	(32) Passenger Seat Belt Anchor Pretensioner High Control	(32) I	(32) —
(33) 33	(33) 0.5	(33) GY / OG	(33) 3480	(33) Passenger Seat Belt Anchor Pretensioner Low Control	(33) I	(33) —
34 - 36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.35	(37) GN	(37) 2308	(37) Passenger Air Bag Off Indicator Control	(37) I	(37) —
(38) 38	(38) 0.5	(38) OG / VT	(38) 3026	(38) Passenger Instrument Panel Air Bag Stage 2 Low Control	(38) I	(38) —
(39) 39	(39) 0.5	(39) GY / OG	(39) 3027	(39) Passenger Instrument Panel Air Bag Stage 2 High Control	(39) I	(39) —
(40) 40	(40) 0.35 (40) 0.35	(40) GN (40) VT / WH	(40) 3118 (40) 5234	(40) Roof Rail Air Bag Disable Indicator Control (40) Passenger Seat Belt Indicator Control	(40) I (40) I	(40) C91 (40) - C91
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) BK / WH	(42) 1351	(42) Signal Ground	(42) I	(42) —
(43) 43	(43) 0.35	(43) BU / GN	(43) 4103	(43) AUTOSAR CAN Bus [+] 9 Serial Data	(43) I	(43) —
(44) 44	(44) 0.35	(44) WH / GN	(44) 4102	(44) AUTOSAR CAN Bus [-] 9 Serial Data	(44) I	(44) —
45	—	—	—	Not Occupied	—	—
(46) 46	(46) 0.5	(46) VT / OG	(46) 3482	(46) Driver Seat Belt Anchor Pretensioner Low Control	(46) I	(46) —
(47) 47	(47) 0.5	(47) OG / YE	(47) 3481	(47) Driver Seat Belt Anchor Pretensioner High Control	(47) I	(47) —
48 - 49	—	—	—	Not Occupied	—	—
(50) 50	(50) 0.35	(50) BN / WH	(50) 3895	(50) Roof Rail Air Bag Disable Switch Low Reference	(50) I	(50) —
(51) 51	(51) 0.35	(51) BU / WH	(51) 3119	(51) Roof Rail Air Bag Disable Switch Signal	(51) I	(51) —
(52) 52	(52) 0.35	(52) BU	(52) 2307	(52) Passenger Air Bag On Indicator Control	(52) I	(52) —
53 - 54	—	—	—	Not Occupied	—	—
(55) 55	(55) 0.5	(55) VT / WH	(55) 1139	(55) Run/Crank Ignition 1 Voltage	(55) I	(55) —
(56) 56	(56) 0.5	(56) RD / GN	(56) 4440	(56) Battery Positive Voltage	(56) I	(56) —

K36 Restraints Control Module X2



5377124

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160099-0009
- Service Connector: 85004498
- Description: 56-Way F 0.64 MX123 Series, Sealed(BK)

Terminal Part Information

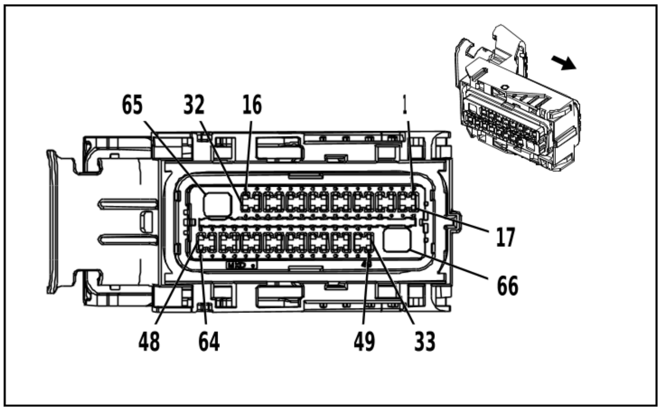
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354746	J-35616-64B (L-BU)	J-38125-213

K36 Restraints Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) BU / OG	(10) 5163	(10) Rear Center Seat Belt Switch Signal	(10) I	(10) —
(11) 11	(11) 0.5	(11) YE / OG	(11) 5161	(11) Left Rear Seat Belt Switch Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) OG / BN	(12) 238	(12) Driver Seat Belt Switch Signal	(12) I	(12) —
(13) 13	(13) 0.5	(13) BK / OG	(13) 6627	(13) Right Rear Side Impact Sensor Low Reference	(13) I	(13) —
(14) 14	(14) 0.5	(14) OG / WH	(14) 6626	(14) Right Rear Side Impact Sensor Signal	(14) I	(14) —
15 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.5	(23) BK / OG	(23) 1363	(23) Driver Seat Belt Switch Low Reference	(23) I	(23) —
(24) 24	(24) 0.5	(24) BN / OG	(24) 5162	(24) Right Rear Seat Belt Switch Signal	(24) I	(24) —
(25) 25	(25) 0.5	(25) OG / VT	(25) 1362	(25) Passenger Seat Belt Switch Signal	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) BK / OG	(27) 6628	(27) Left Front Side Impact Sensor Low Reference	(27) I	(27) —
(28) 28	(28) 0.5	(28) OG / GN	(28) 2132	(28) Left Front Side Impact Sensor Signal	(28) I	(28) —
29 - 36	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(37) 37	(37) 0.5	(37) OG / GY	(37) 5021	(37) Right Front Roof Rail Air Bag High Control	(37) I	(37) —
(38) 38	(38) 0.5	(38) WH / OG	(38) 5022	(38) Right Front Roof Rail Air Bag Low Control	(38) I	(38) —
(39) 39	(39) 0.5	(39) BU / OG	(39) 4957	(39) Passenger Seat Back Air Bag Low Control	(39) I	(39) —
(40) 40	(40) 0.5	(40) OG / GY	(40) 4956	(40) Passenger Seat Back Air Bag High Control	(40) I	(40) —
(41) 41	(41) 0.5	(41) BK / OG	(41) 6629	(41) Right Front Side Impact Sensor Low Reference	(41) I	(41) —
(42) 42	(42) 0.5	(42) BN / OG	(42) 2134	(42) Right Front Side Impact Sensor Signal	(42) I	(42) —
43 - 50	—	—	—	Not Occupied	—	—
(51) 51	(51) 0.5	(51) OG / GN	(51) 5019	(51) Left Front Roof Rail Air Bag High Control	(51) I	(51) —
(52) 52	(52) 0.5	(52) VT / OG	(52) 5020	(52) Left Front Roof Rail Air Bag Low Control	(52) I	(52) —
(53) 53	(53) 0.5	(53) BK / OG	(53) 4963	(53) Driver Seat Back Air Bag Low Control	(53) I	(53) —
(54) 54	(54) 0.5	(54) OG / BU	(54) 4962	(54) Driver Seat Back Air Bag High Control	(54) I	(54) —
(55) 55	(55) 0.5	(55) BK / OG	(55) 6623	(55) Left Rear Side Impact Sensor Low Reference	(55) I	(55) —
(56) 56	(56) 0.5	(56) OG / BU	(56) 6622	(56) Left Rear Side Impact Sensor Signal	(56) I	(56) —

K38 Chassis Control Module



4024881

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34822-0853
- Service Connector: 85786014
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

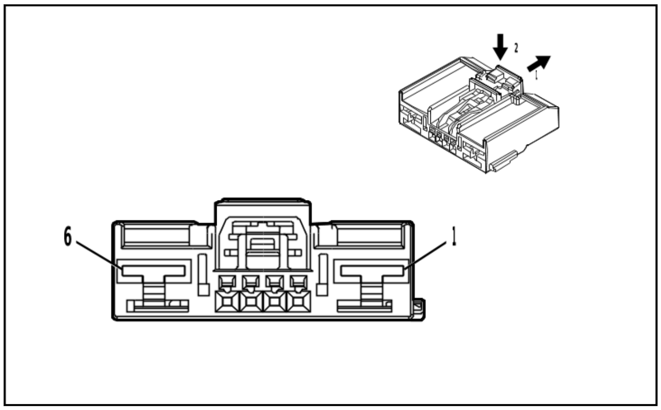
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K38 Chassis Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / BK	(6) 739	(6) Run/Crank Ignition 1 Voltage	(6) II	(6) —
7 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.5	(13) YE / GN	(13) 7122	(13) Axle Differential Lock Switch Signal	(13) II	(13) —
14 - 31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) VT / GY	(32) 7117	(32) Front Axle Differential Lock Indicator Control	(32) II	(32) —
(33) 33	(33) 0.75	(33) VT / WH	(33) 7256	(33) Front Differential Lock Actuator Control	(33) II	(33) —
(34) 34	(34) 0.5	(34) BU / BK	(34) 4977	(34) AUTOSAR CAN Bus [+] 3 Serial Data	(34) II	(34) —
(35) 35	(35) 0.5	(35) BU / BK	(35) 4977	(35) AUTOSAR CAN Bus [+] 3 Serial Data	(35) II	(35) —
(36) 36	(36) 0.5	(36) WH	(36) 4976	(36) AUTOSAR CAN Bus [-] 3 Serial Data	(36) II	(36) —
(37) 37	(37) 0.5	(37) WH	(37) 4976	(37) AUTOSAR CAN Bus [-] 3 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) YE	(38) 7115	(38) Rear Axle Differential Lock Indicator Control	(38) II	(38) —
39 - 43	—	—	—	Not Occupied	—	—
(44) 44	(44) 0.75	(44) GY / BK	(44) 7253	(44) Rear Differential Lock Actuator Low Control	(44) II	(44) —
45 - 49	—	—	—	Not Occupied	—	—
(50) 50	(50) 0.75	(50) VT / BN	(50) 7258	(50) Rear Differential Lock Actuator Control	(50) II	(50) —
51 - 59	—	—	—	Not Occupied	—	—
(60) 60	(60) 0.75	(60) WH / BK	(60) 7254	(60) Front Differential Lock Actuator Low Control	(60) II	(60) —
61 - 64	—	—	—	Not Occupied	—	—
(65) 65	(65) 1	(65) BK	(65) 5550	(65) Ground	(65) I	(65) —
(66) 66	(66) 1	(66) RD / WH	(66) 2140	(66) Battery Positive Voltage	(66) I	(66) —

K40D Driver Seat Adjuster Memory Module X1 (A45)



4650258

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series(BK)

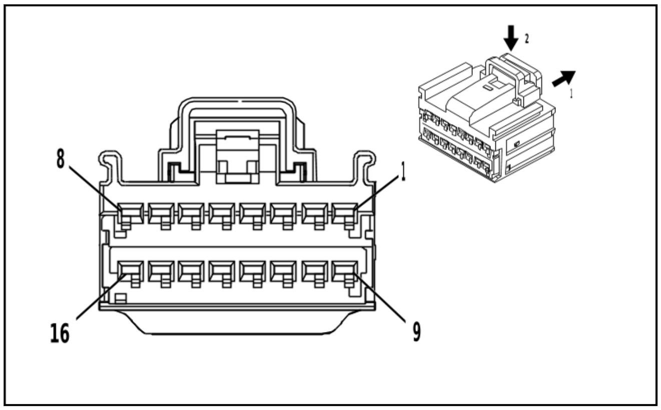
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

K40D Driver Seat Adjuster Memory Module X1 (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 3750	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) RD / VT	(3) 3340	(3) Battery Positive Voltage	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 2.5	(6) RD / BN	(6) 3640	(6) Battery Positive Voltage	(6) I	(6) —

K40D Driver Seat Adjuster Memory Module X2



4332214

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series(BK)

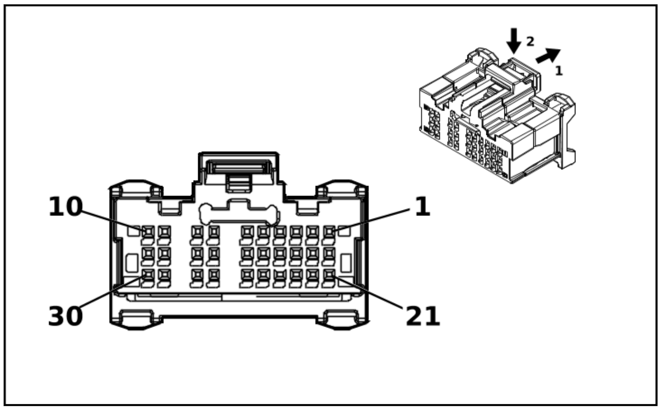
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

K40D Driver Seat Adjuster Memory Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) YE / BU	(1) 285	(1) Driver Seat Horizontal Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / YE	(3) 276	(3) Driver Seat Recline Motor Forward Control	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) BU / VT	(6) 287	(6) Driver Seat Front Vertical Motor Down Control	(6) I	(6) —
(7) 7	(7) 1.5	(7) YE	(7) 282	(7) Driver Seat Rear Vertical Motor Up Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 1.5	(9) BU / YE	(9) 277	(9) Driver Seat Recline Motor Rearward Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 1.5	(11) GY / GN	(11) 284	(11) Driver Seat Horizontal Motor Rearward Control	(11) I	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 1.5	(13) GY / BU	(13) 283	(13) Driver Seat Rear Vertical Motor Down Control	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 1.5	(16) GN / BN	(16) 286	(16) Driver Seat Front Vertical Motor Up Control	(16) I	(16) —

K40D Driver Seat Adjuster Memory Module X3 (A45)



5202284

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series(BK)

Terminal Part Information

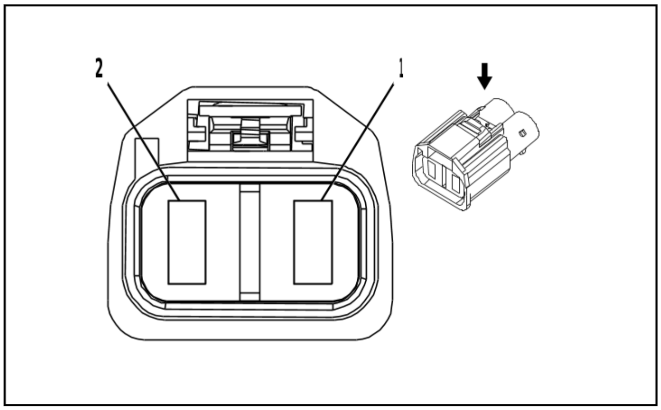
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required
II	Not required	No Tool Required	No Tool Required

K40D Driver Seat Adjuster Memory Module X3 (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU / GN	(2) 614	(2) Seat Memory Switch Set Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BN	(5) 3038	(5) Driver Seat Right Rear Haptic Movement Motor Control	(5) II	(5) —
(6) 6	(6) 0.35	(6) YE / BN	(6) 3037	(6) Driver Seat Left Rear Haptic Movement Motor Control	(6) II	(6) —
7 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) WH	(9) 4100	(9) AUTOSAR CAN Bus [-] 4 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / VT	(10) 4101	(10) AUTOSAR CAN Bus [+] 4 Serial Data	(10) I	(10) —
11 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) WH	(16) 615	(16) Seat Memory Switch Signal 1	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) GN / GY	(18) 3758	(18) Driver Seat Adjuster Memory Module LIN Bus 2	(18) I	(18) —
(19) 19	(19) 0.35	(19) WH	(19) 4100	(19) AUTOSAR CAN Bus [-] 4 Serial Data	(19) I	(19) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(20) 20	(20) 0.35	(20) BU / VT	(20) 4101	(20) AUTOSAR CAN Bus [+] 4 Serial Data	(20) I	(20) —
21 - 30	—	—	—	Not Occupied	—	—

K43 Power Steering Control Module X1



2748050

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 7287-1990-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 Series, Sealed(BK)

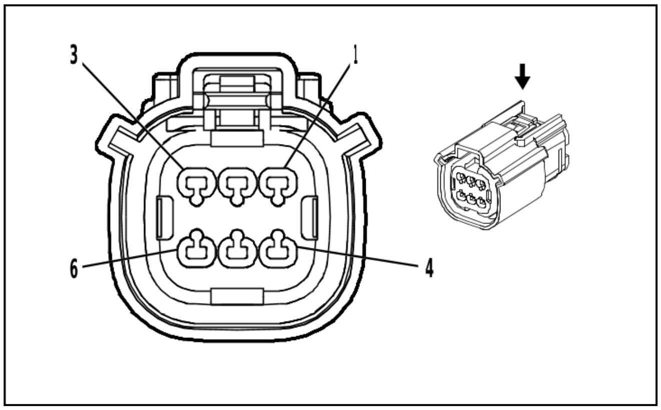
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-22 (RD)	No Tool Required

K43 Power Steering Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 16	(1) BK	(1) 250	(1) Ground	(1) I	(1) —
(2) 2	(2) 16	(2) RD / VT	(2) 542	(2) Battery Positive Voltage	(2) I	(2) —

K43 Power Steering Control Module X2



1986157

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 33472-0674
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

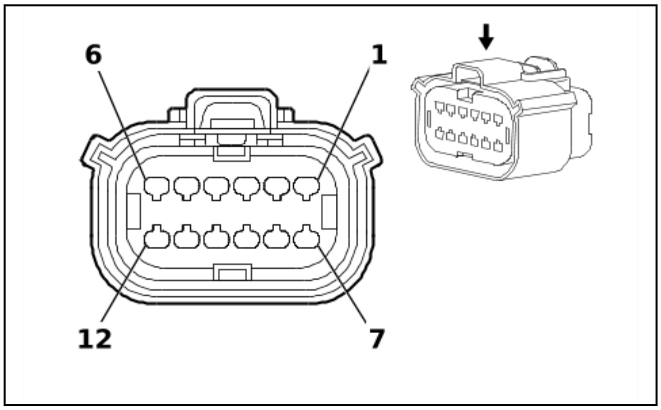
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

K43 Power Steering Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4978	(1) AUTOSAR CAN Bus [-] 2 Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / YE	(2) 4979	(2) AUTOSAR CAN Bus [+] 2 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4978	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

K43 Power Steering Control Module X3



1825165

Connector Part Information

- Harness Type: Power Steering
- OEM Connector: 33472-1252
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

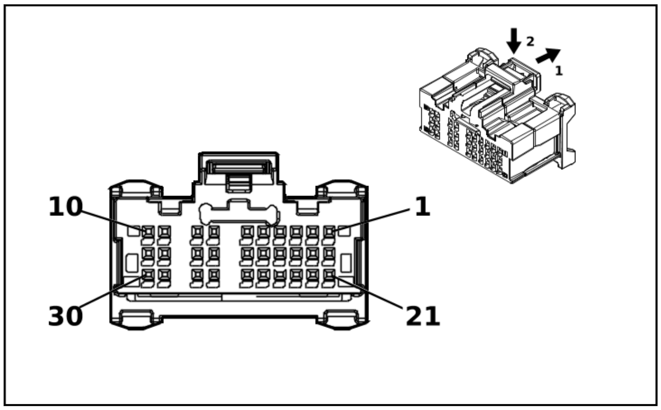
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K43 Power Steering Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / WH	(1) 8367	(1) Handwheel Channel A Torque Pressure Sensor 1 SENT Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / RD	(2) 8366	(2) Handwheel Channel A High Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 8370	(3) Handwheel Channel A Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / RD	(4) 8371	(4) Handwheel Channel B High Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN	(5) 8372	(5) Handwheel Channel B Torque Pressure Sensor 1 SENT Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) VT	(6) 8368	(6) Handwheel Channel A Torque Pressure Sensor 2 SENT Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 8369	(7) Handwheel Channel A Angle Position Sensor SENT Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) BK / GY	(8) 8375	(8) Handwheel Channel B Low Reference	(8) I	(8) —
(9) 9	(9) 0.5	(9) GN / BU	(9) 8374	(9) Handwheel Channel B Angle Position Sensor SENT Signal	(9) I	(9) —
(10) 10	(10) 0.5	(10) YE / GN	(10) 8373	(10) Handwheel Channel B Torque Pressure Sensor 2 SENT Signal	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

K56 Serial Data Gateway Module X1



5202284

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-1
- Service Connector: 84766507
- Description: 30-Way F 0.5 MQS Series(BK)

Terminal Part Information

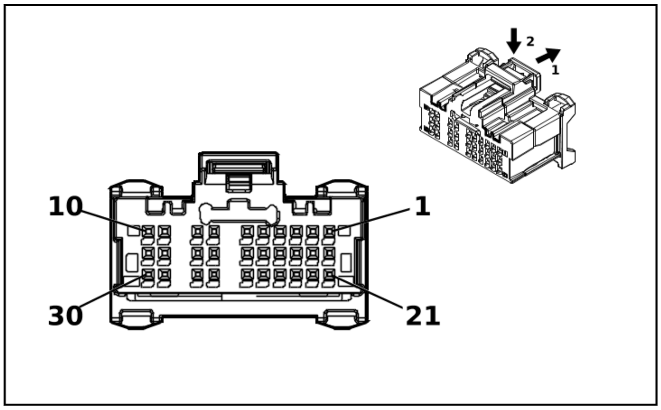
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58

K56 Serial Data Gateway Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / WH	(1) 6440	(1) Battery Positive Voltage	(1) I	(1) —
2 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BK / WH	(4) 2151	(4) Signal Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU	(5) 4987	(5) AUTOSAR CAN Bus [+] 1 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4986	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 4100	(7) AUTOSAR CAN Bus [-] 4 Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / VT	(8) 4101	(8) AUTOSAR CAN Bus [+] 4 Serial Data	(8) I	(8) —
9 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) BU	(15) 4987	(15) AUTOSAR CAN Bus [+] 1 Serial Data	(15) I	(15) —
(16) 16	(16) 0.35	(16) WH	(16) 4986	(16) AUTOSAR CAN Bus [-] 1 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) WH	(17) 4978	(17) AUTOSAR CAN Bus [-] 2 Serial Data	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / YE	(18) 4979	(18) AUTOSAR CAN Bus [+] 2 Serial Data	(18) I	(18) —
(19) 19	(19) 0.35	(19) BU / YE	(19) 4984	(19) AUTOSAR CAN Bus [-] 5 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) BU / WH	(20) 4985	(20) AUTOSAR CAN Bus [+] 5 Serial Data	(20) I	(20) —
21 - 24	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(25) 25	(25) 0.35	(25) BU	(25) 4987	(25) AUTOSAR CAN Bus [+] 1 Serial Data	(25) I	(25) —
(26) 26	(26) 0.35	(26) WH	(26) 4986	(26) AUTOSAR CAN Bus [-] 1 Serial Data	(26) I	(26) —
(27) 27	(27) 0.35	(27) WH	(27) 4978	(27) AUTOSAR CAN Bus [-] 2 Serial Data	(27) I	(27) —
(28) 28	(28) 0.35	(28) BU / YE	(28) 4979	(28) AUTOSAR CAN Bus [+] 2 Serial Data	(28) I	(28) —
(29) 29	(29) 0.35	(29) BU / YE	(29) 4984	(29) AUTOSAR CAN Bus [-] 5 Serial Data	(29) I	(29) —
(30) 30	(30) 0.35	(30) BU / WH	(30) 4985	(30) AUTOSAR CAN Bus [+] 5 Serial Data	(30) I	(30) —

K56 Serial Data Gateway Module X2



5203942

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-2
- Service Connector: 84766509
- Description: 30-Way F 0.5 MQS Series(BK with L-GY Front Housing)

Terminal Part Information

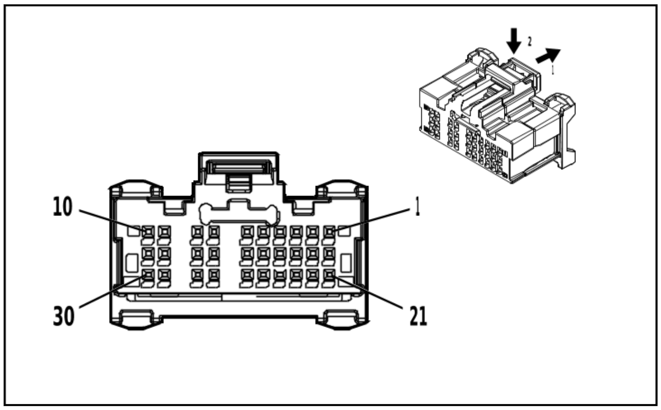
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K56 Serial Data Gateway Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BU / BK	(3) 4977	(3) AUTOSAR CAN Bus [+] 3 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH	(4) 4976	(4) AUTOSAR CAN Bus [-] 3 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / GY	(5) 3559	(5) Passive Start Switch 2 Low Reference	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.35	(7) GN / VT	(7) 5199	(7) Run/Crank Relay Coil Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) YE / WH	(9) 4973	(9) Ethernet Bus 1R [+]	(9) II	(9) —
(10) 10	(10) 0.35	(10) YE	(10) 4972	(10) Ethernet Bus 1R [-]	(10) II	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) BU / BN	(13) 4983	(13) AUTOSAR CAN Bus [+] 7 Serial Data	(13) I	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4982	(14) AUTOSAR CAN Bus [-] 7 Serial Data	(14) I	(14) —
(15) 15	(15) 0.35	(15) GN / BK	(15) 3558	(15) Passive Start Switch Signal 2	(15) I	(15) —
(16) 16	(16) 0.35	(16) WH	(16) 4980	(16) AUTOSAR CAN Bus [-] 6 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) GN	(17) 2578	(17) Private Serial Data Presentation CAN Bus [+] 1 Serial Data	(17) I	(17) —
(18) 18	(18) 0.35	(18) BN	(18) 2577	(18) Private Serial Data Presentation CAN Bus [-] 1 Serial Data	(18) I	(18) —
(19) 19	(19) 0.35	(19) WH	(19) 7207	(19) Ethernet Bus 1 Enable Signal	(19) I	(19) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) BU / WH	(23) 4985	(23) AUTOSAR CAN Bus [+] 5 Serial Data	(23) I	(23) —
(24) 24	(24) 0.35	(24) BU / YE	(24) 4984	(24) AUTOSAR CAN Bus [-] 5 Serial Data	(24) I	(24) —
25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.35	(26) YE	(26) 4981	(26) AUTOSAR CAN Bus [+] 6 Serial Data	(26) I	(26) —
(27) 27	(27) 0.35	(27) VT	(27) 2580	(27) Private Serial Data Presentation CAN Bus [+] 2 Serial Data	(27) I	(27) —
(28) 28	(28) 0.35	(28) GY	(28) 2579	(28) Private Serial Data Presentation CAN Bus [-] 2 Serial Data	(28) I	(28) —
(29) 29	(29) 0.35	(29) GN / WH	(29) 4975	(29) Ethernet Bus 1T [+]	(29) II	(29) —
(30) 30	(30) 0.35	(30) GN	(30) 4974	(30) Ethernet Bus 1T [-]	(30) II	(30) —

K56 Serial Data Gateway Module X3



4900333

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-3
- Service Connector: 13519319
- Description: 30-Way F 0.5 MQS Series(BK with D-GY Front Housing)

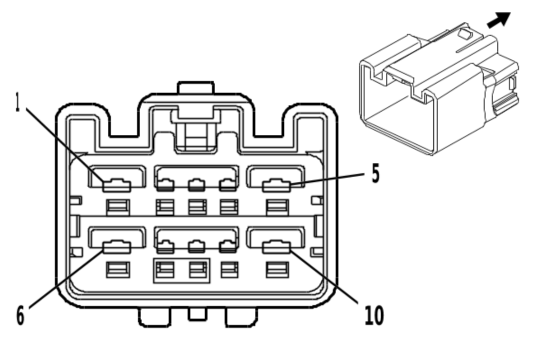
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K56 Serial Data Gateway Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / GN	(1) 4103	(1) AUTOSAR CAN Bus [+] 9 Serial Data	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / GN	(2) 4102	(2) AUTOSAR CAN Bus [-] 9 Serial Data	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / YE	(5) 4979	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4978	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) I	(6) —
(7) 7	(7) 0	(7) BU / WH	(7) 4758	(7) Ethernet Bus 2 [+]	(7) II	(7) —
(8) 8	(8) 0	(8) BU	(8) 4757	(8) Ethernet Bus 2 [-]	(8) II	(8) —
9 - 30	—	—	—	Not Occupied	—	—

K61 Sunroof Control Module



1851890

Connector Part Information

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 7282-6459-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.5, 2.8 Kaizen Series(L-GY)

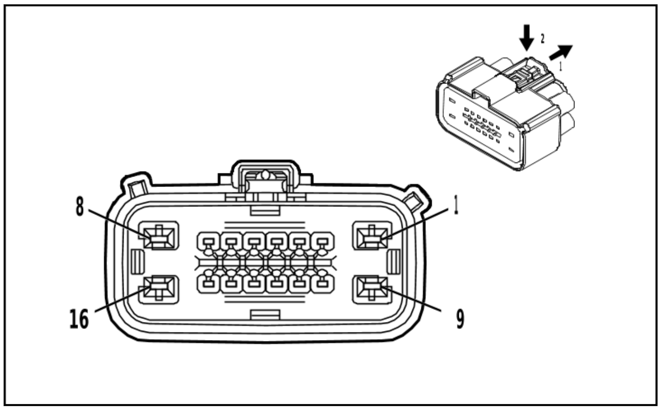
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

K61 Sunroof Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU / VT	(2) 5027	(2) Sunroof Switch Serial Data 1 Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) WH / GN	(4) 3031	(4) Sunroof Vent Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GN / WH	(6) 2854	(6) Body Control Module LIN Bus 8	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 1.5	(8) RD / YE	(8) 2340	(8) Battery Positive Voltage	(8) I	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 1.5	(10) BK	(10) 1850	(10) Ground	(10) I	(10) —

K67 Trailer Brake Control Module



4624589

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34985-4016
- Service Connector: 13599889
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(GY)

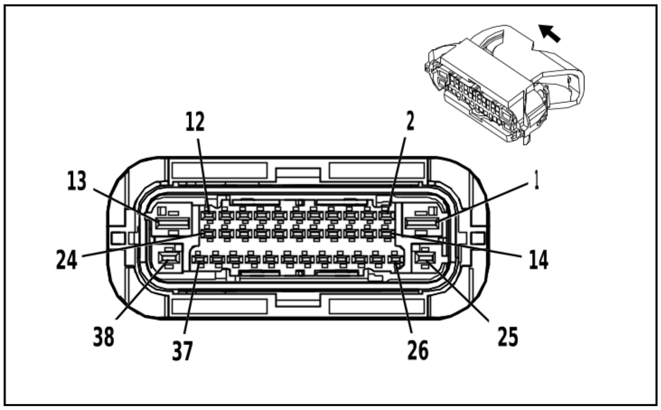
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13576377	J-35616-35 (VT)	J-38125-12A
II	85528055	J-35616-2A (GY)	J-38125-217

K67 Trailer Brake Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / VT	(1) 1242	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / BK	(2) 2223	(2) Trailer Brake Apply Signal	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) YE / BK	(5) 2224	(5) Trailer Brake Enable Signal	(5) II	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 2.5	(8) BU	(8) 47	(8) Trailer Auxiliary Control	(8) I	(8) —
(9) 9	(9) 2.5	(9) BK	(9) 5550	(9) Ground	(9) I	(9) —
10 - 11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / BU	(12) 2733	(12) Brake System Control Module LIN Bus 2	(12) II	(12) —
13 - 16	—	—	—	Not Occupied	—	—

K68 Trailer Lamp Control Module



5141918

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35740705
- Service Connector: 86825459
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed(BK with BN Inner Connector)

Terminal Part Information

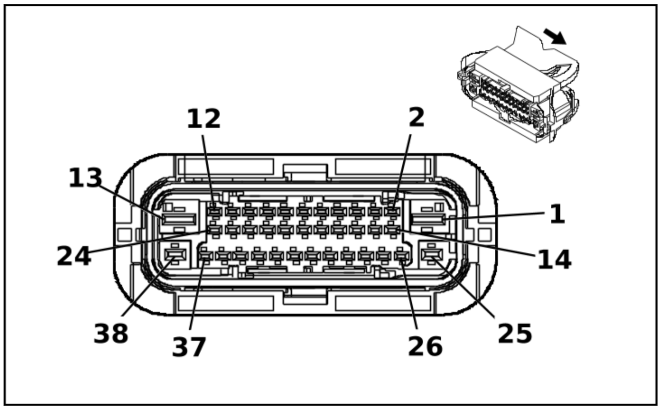
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	19369235	J-35616-14 (GN)	EL-38125-560A
III	85158596	J-35616-40 (BU)	J-38125-556

K68 Trailer Lamp Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / YE	(1) 5840	(1) Battery Positive Voltage	(1) III	(1) —
(2) 2	(2) 0.75	(2) YE / GY	(2) 1618	(2) Left Rear Trailer Stop/Turn Lamp Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) GN / VT	(3) 1619	(3) Right Rear Trailer Stop/Turn Lamp Control	(3) II	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) GN / WH	(7) 5189	(7) Trailer Backup Lamp Control	(7) II	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) VT / BK	(10) 739	(10) Run/Crank Ignition 1 Voltage	(10) II	(10) —
(11) 11	(11) 0.5	(11) BN / YE	(11) 820	(11) Center High Mounted Stop Lamp Supply Voltage	(11) II	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 2.5	(13) BK	(13) 5550	(13) Ground	(13) III	(13) —
14 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 1.5	(25) GY / BN	(25) 2109	(25) Trailer Park Lamp Control	(25) I	(25) —
26	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(27) 27	(27) 0.5	(27) BU / VT	(27) 4101	(27) AUTOSAR CAN Bus [+] 4 Serial Data	(27) II	(27) —
(28) 28	(28) 0.5	(28) WH	(28) 4100	(28) AUTOSAR CAN Bus [-] 4 Serial Data	(28) II	(28) —
(29) 29	(29) 0.5	(29) BU / VT	(29) 4101	(29) AUTOSAR CAN Bus [+] 4 Serial Data	(29) II	(29) —
(30) 30	(30) 0.5	(30) WH	(30) 4100	(30) AUTOSAR CAN Bus [-] 4 Serial Data	(30) II	(30) —
31 - 37	—	—	—	Not Occupied	—	—
(38) 38	(38) 2.5	(38) RD / VT	(38) 5640	(38) Battery Positive Voltage	(38) I	(38) —

K69 Transfer Case Control Module



5199340

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35740703
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed(BK with BN Inner Connector)

Terminal Part Information

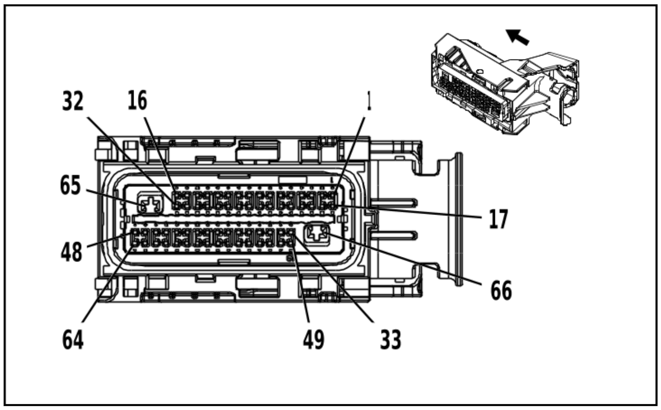
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	19369235	J-35616-14 (GN)	EL-38125-560A
III	85158596	J-35616-40 (BU)	J-38125-556

K69 Transfer Case Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 4	(1) RD / WH	(1) 2242	(1) Battery Positive Voltage	(1) III	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4978	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) II	(4) —
(5) 5	(5) 0.5	(5) WH / GN	(5) 7479	(5) Rotary Position Sensor Signal	(5) II	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE	(7) 7474	(7) Incremental Encoder Direction Signal	(7) II	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) YE / WH	(9) 1695	(9) 4WD Locked Range Indicator Control	(9) II	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) VT / GY	(11) 8017	(11) Secondary Axle Motor Relay Control	(11) II	(11) —
(12) 12	(12) 0.5	(12) GY / BK	(12) 1570	(12) Front Axle Actuator Control	(12) II	(12) —
(13) 13	(13) 2.5	(13) YE / VT	(13) 1553	(13) Transfer Case Motor Counter Clockwise Control	(13) III	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) BU / YE	(15) 4979	(15) AUTOSAR CAN Bus [+] 2 Serial Data	(15) II	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4978	(16) AUTOSAR CAN Bus [-] 2 Serial Data	(16) II	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) VT / BK	(18) 2139	(18) Run/Crank Ignition 1 Voltage	(18) II	(18) —
(19) 19	(19) 0.5	(19) BU / GY	(19) 7473	(19) Incremental Encoder Impulse Signal	(19) II	(19) —
(20) 20	(20) 0.5	(20) WH / RD	(20) 7477	(20) Gear Position Sensor 5V Reference	(20) II	(20) —
21 - 23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) BK	(24) 8015	(24) Transfer Case Motor Low Reference	(24) II	(24) —
(25) 25	(25) 2.5	(25) BK	(25) 450	(25) Ground	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) BK	(27) 8014	(27) Transfer Case Lock Solenoid Low Reference	(27) II	(27) —
28 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) YE / BK	(30) 7478	(30) Gear Position Sensor Low Reference	(30) II	(30) —
(31) 31	(31) 0.5	(31) WH / GN	(31) 7475	(31) Incremental Encoder Sensor Voltage Reference	(31) II	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.75	(33) BU	(33) 8013	(33) Transfer Case Lock Solenoid Control 2	(33) II	(33) —
(34) 34	(34) 0.75	(34) YE / BN	(34) 1569	(34) Transfer Case Lock Solenoid Valve Control	(34) II	(34) —
35	—	—	—	Not Occupied	—	—
(36) 36	(36) 0.5	(36) VT	(36) 7476	(36) Incremental Encoder Sensor Low Reference	(36) II	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 2.5	(38) YE / GY	(38) 1552	(38) Transfer Case Motor Clockwise Control	(38) I	(38) —

K71 Transmission Control Module



3621452

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34822-0943
- Service Connector: 85761018
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

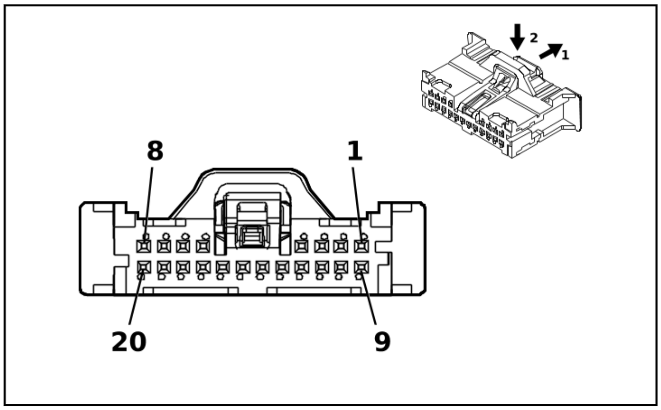
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K71 Transmission Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4507	(1) Transmission Clutch H Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 6401	(2) Clutch Solenoid Valve B Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / BU	(3) 1530	(3) Transmission Line Pressure Control Solenoid Valve Control	(3) II	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GY / RD	(5) 10817	(5) Lubricant Circuit Pressure Sensor 5 Volt Reference	(5) II	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) II	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) BU / BK	(11) 10819	(11) Lubricant Circuit Pressure Sensor Low Reference	(11) II	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.5	(13) GN / VT	(13) 4510	(13) Transmission Intermediate Speed Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) GY / BU	(14) 6358	(14) Output Speed Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) GN / RD	(15) 6353	(15) Input Speed Signal	(15) II	(15) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.5	(17) WH	(17) 4508	(17) Transmission Clutch G Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) BN	(18) 6400	(18) Clutch Solenoid Valve A Control	(18) II	(18) —
(19) 19	(19) 0.5	(19) GY	(19) 6402	(19) Clutch Solenoid Valve C Control	(19) II	(19) —
(20) 20	(20) 0.5	(20) VT / WH	(20) 422	(20) Torque Converter Clutch Solenoid Valve Control	(20) II	(20) —
(21) 21	(21) 0.5	(21) GN / BN	(21) 6380	(21) Torque Converter Clutch Enable Solenoid Valve A Control	(21) II	(21) —
(22) 22	(22) 0.5	(22) YE / BN	(22) 6210	(22) Torque Converter Clutch Enable Solenoid Valve B Control	(22) II	(22) —
23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) GN / WH	(24) 2968	(24) Transmission Auxiliary Fluid Pump Control	(24) II	(24) —
25 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) BK / BN	(28) 586	(28) Transmission Fluid Temperature Sensor Low Reference	(28) II	(28) —
29 - 32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.75	(33) GN / GY	(33) 6387	(33) Transmission High Side Driver 1 Control	(33) II	(33) —
34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) VT / BK	(35) 2139	(35) Run/Crank Ignition 1 Voltage	(35) II	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU / YE	(37) 4979	(37) AUTOSAR CAN Bus [+] 2 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) WH	(38) 4978	(38) AUTOSAR CAN Bus [-] 2 Serial Data	(38) II	(38) —
39 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) GN / YE	(45) 10816	(45) Lubricant Circuit Pressure Sensor Signal	(45) II	(45) —
46 - 48	—	—	—	Not Occupied	—	—
(49) 49	(49) 0.75	(49) GY / BN	(49) 6388	(49) Transmission High Side Driver 2 Control	(49) II	(49) —
50 - 52	—	—	—	Not Occupied	—	—
(53) 53	(53) 0.5	(53) BU / YE	(53) 4979	(53) AUTOSAR CAN Bus [+] 2 Serial Data	(53) II	(53) —
(54) 54	(54) 0.5	(54) WH	(54) 4978	(54) AUTOSAR CAN Bus [-] 2 Serial Data	(54) II	(54) —
55 - 62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) BN / WH	(63) 585	(63) Transmission Fluid Temperature Sensor Signal	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / WH	(64) 3338	(64) Transmission Internal Mode Switch Mode Control X	(64) II	(64) —
(65) 65	(65) 1.5	(65) BK / WH	(65) 6251	(65) Transmission Control Module Ground	(65) I	(65) —
(66) 66	(66) 0.75	(66) RD / GN	(66) 1840	(66) Battery Positive Voltage	(66) I	(66) —

K73 Telematic Control Module X1



5200955

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35068196
- Service Connector: 84769280
- Description: 20-Way F Mini 50 Series(BK)

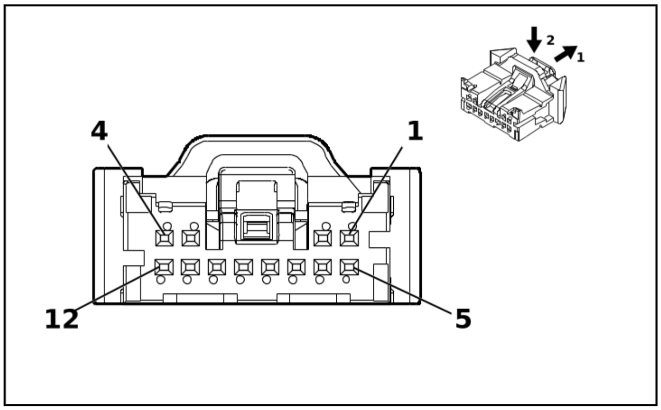
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84944580	EL-35616-58 (BK)	EL-38125-58

K73 Telematic Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BU	(1) 3240	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GN / BK	(3) 2515	(3) Telematics Switch Supply Voltage	(3) I	(3) —
(4) 4	(4) 0.35	(4) GN / WH	(4) 2514	(4) Telematics Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE / VT	(5) 2516	(5) Telematics Switch Green LED Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BN / WH	(6) 2517	(6) Telematics Switch Red LED Indicator Control	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU / WH	(7) 4985	(7) AUTOSAR CAN Bus [+] 5 Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) AUTOSAR CAN Bus [-] 5 Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / WH	(9) 451	(9) Signal Ground	(9) I	(9) —
10 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) BU / WH	(19) 4985	(19) AUTOSAR CAN Bus [+] 5 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) BU / YE	(20) 4984	(20) AUTOSAR CAN Bus [-] 5 Serial Data	(20) I	(20) —

K73 Telematic Control Module X2



5360826

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series(BK)

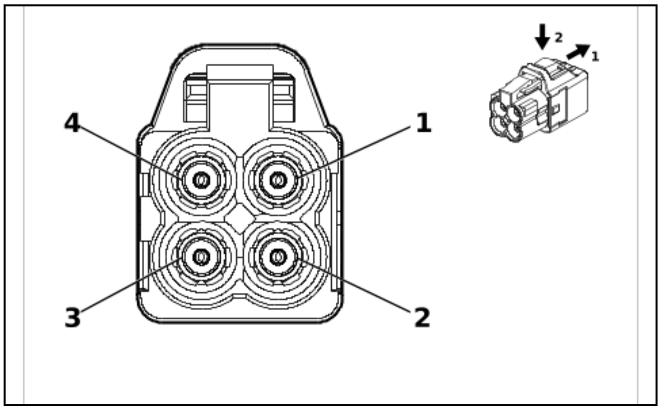
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84944580	EL-35616-58 (BK)	EL-38125-58

K73 Telematic Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / GN	(1) 4770	(1) Emergency Call Backup Speaker [+] Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / BK	(2) 4769	(2) Emergency Call Backup Speaker [-] Control	(2) I	(2) —
3 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GY / YE	(6) 5149	(6) Voice Recognition Audio Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) BK / GY	(7) 5152	(7) Voice Recognition Audio [-] Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU	(8) 655	(8) Cellular Telephone Microphone Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / BN	(9) 654	(9) Cellular Telephone Microphone Low Reference	(9) I	(9) —
(10) 10	(10) 0.35	(10) BARE	(10) 1792	(10) Low Reference	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

K73 Telematic Control Module X3



5835118

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13544819
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type(BK)

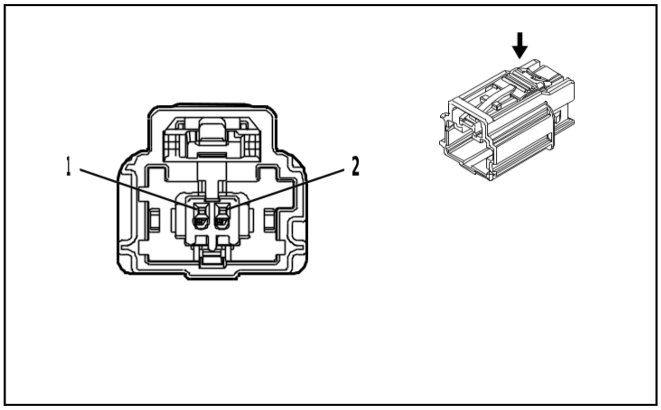
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K73 Telematic Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(GPS/Cell) Coaxial Antenna Cell/GPS combined Signal	I	—

K73 Telematic Control Module X7



4942391

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35122188
- Service Connector: 13532867
- Description: 2-Way F 0.5 CTS, AMEC High Speed Data Series(BK)

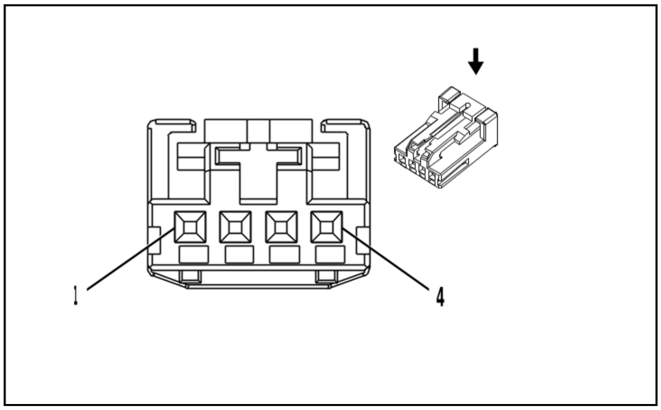
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K73 Telematic Control Module X7

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.1	(1) GY / WH	(1) 7211	(1) Ethernet Bus 4 [+]	(1) I	(1) —
(2) 2	(2) 0.1	(2) GN	(2) 7210	(2) Ethernet Bus 4 [-]	(2) I	(2) —

K77 Remote Function Actuator Module



2717162

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

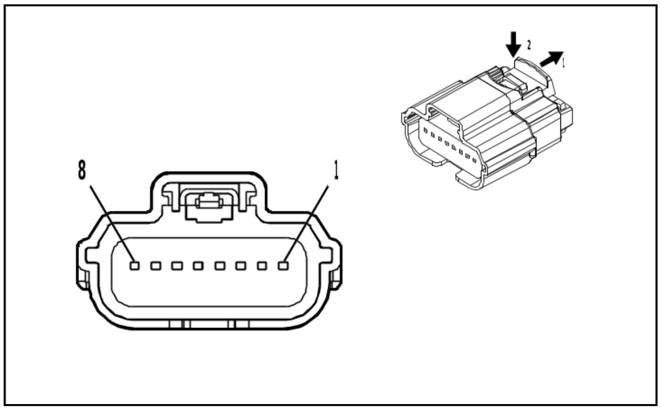
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K77 Remote Function Actuator Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / VT	(1) 1640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / YE	(2) 2862	(2) Body Control Module LIN Bus 16	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BK / WH	(4) 451	(4) Signal Ground	(4) I	(4) —

K85P Restraints Occupant Classification System Module - Passenger



4708234

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

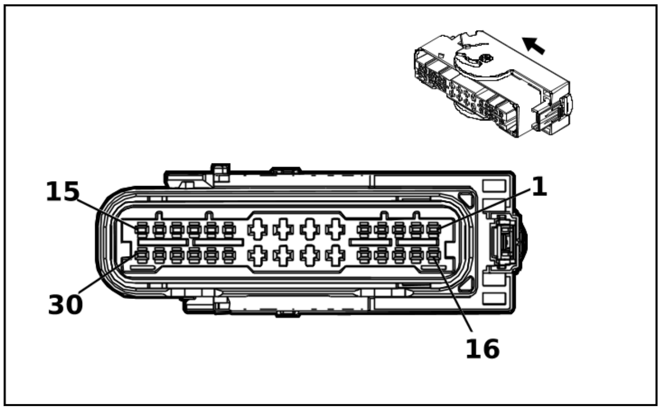
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K85P Restraints Occupant Classification System Module - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 4440	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 4987	(2) AUTOSAR CAN Bus [+] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 4987	(3) AUTOSAR CAN Bus [+] 1 Serial Data	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4986	(4) AUTOSAR CAN Bus [-] 1 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4986	(5) AUTOSAR CAN Bus [-] 1 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / WH	(6) 1351	(6) Signal Ground	(6) I	(6) —
(7) 7	(7) 0.5	(7) OG / BN	(7) 3947	(7) Passenger Automatic Locking Retractor Switch Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) GY / OG	(8) 3946	(8) Passenger Automatic Locking Retractor Switch Low Reference	(8) I	(8) —

K111 Fuel Pump Power Control Module



3240109

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 5-2109446-2
- Service Connector: 86545828
- Description: 30-Way F 1.5, 2.8 MCP Series, Sealed(BK)

Terminal Part Information

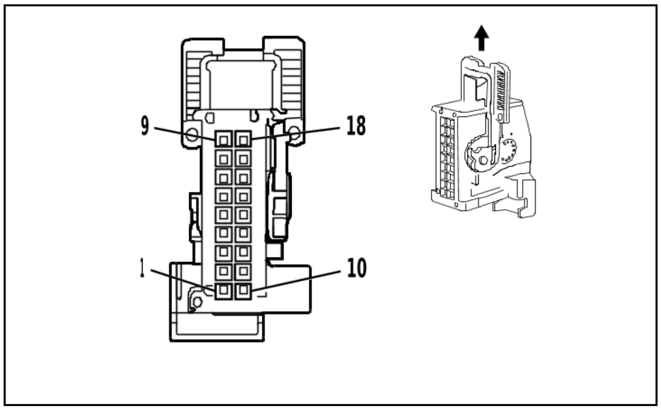
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19329958	J-35616-2A (GY)	J-38125-217
II	19371214	J-35616-35 (VT)	J-38125-556

K111 Fuel Pump Power Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) RD / VT	(7) 1940	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 2.5	(8) GY	(8) 120	(8) Fuel Pump Control	(8) II	(8) —
(9) 9	(9) 2.5	(9) YE / GY	(9) 4137	(9) Fuel Pump Supply Voltage Phase 2	(9) II	(9) —
(10) 10	(10) 0.5	(10) YE / RD	(10) 2709	(10) Fuel Tank Pressure Sensor 5V Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) BU / WH	(11) 890	(11) Fuel Tank Pressure Sensor Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) BN / RD	(12) 7445	(12) Fuel Line Pressure Sensor 5V Reference	(12) I	(12) —
(13) 13	(13) 0.5	(13) BU / GN	(13) 1936	(13) Primary Fuel Level Sensor Signal	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) BU / GY	(15) 4054	(15) Private Serial Data Powertrain CAN Bus [-] Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) VT / GN	(16) 4320	(16) Powertrain Sensor Bus Enable	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) GN / GY	(18) 465	(18) Fuel Pump Primary Relay Control	(18) I	(18) —
19 - 20	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(21) 21	(21) 0.5	(21) WH	(21) 1310	(21) EVAP Vent Solenoid Valve Control	(21) II	(21) —
(22) 22	(22) 2.5	(22) BK	(22) 750	(22) Ground	(22) II	(22) —
(23) 23	(23) 0.5	(23) BU	(23) 7444	(23) Fuel Pump Assembly Shield Ground	(23) II	(23) —
(24) 24	(24) 2.5	(24) WH / BN	(24) 4138	(24) Fuel Pump Supply Voltage Phase 3	(24) II	(24) —
(25) 25	(25) 0.5	(25) BK / BN	(25) 6284	(25) Fuel Tank Pressure Sensor Low Reference	(25) I	(25) —
(26) 26	(26) 0.5	(26) BU / WH	(26) 7446	(26) Fuel Pressure Sensor Signal	(26) I	(26) —
(27) 27	(27) 0.5	(27) BK / YE	(27) 7447	(27) Fuel Pressure Sensor Low Reference	(27) I	(27) —
(28) 28	(28) 0.5	(28) BK / GN	(28) 6281	(28) Fuel Level Sensor Low Reference	(28) I	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) WH	(30) 4055	(30) Private Serial Data Powertrain CAN Bus [+] Serial Data	(30) I	(30) —

K157 Video Processing Module X1 (UV2 - (UVB & UXA))



1567082

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1379102-1
- Service Connector: 84976200
- Description: 18-Way F Micro-Quadlock Series(BK)

Terminal Part Information

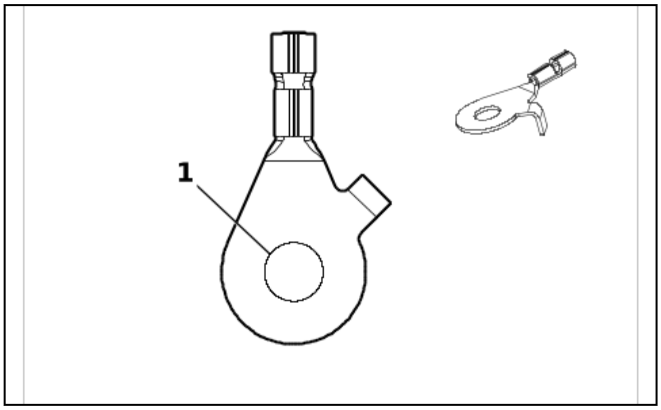
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A

K157 Video Processing Module X1 (UV2 - (UVB & UXA))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BK / WH	(3) 451	(3) Signal Ground	(3) I	(3) —
4 - 9	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(10) 10	(10) 0.5	(10) RD / VT	(10) 1640	(10) Battery Positive Voltage	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) WH	(13) 4986	(13) AUTOSAR CAN Bus [-] 1 Serial Data	(13) I	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4986	(14) AUTOSAR CAN Bus [-] 1 Serial Data	(14) I	(14) —
(15) 15	(15) 0.35	(15) BU	(15) 4987	(15) AUTOSAR CAN Bus [+] 1 Serial Data	(15) I	(15) —
(16) 16	(16) 0.35	(16) BU	(16) 4987	(16) AUTOSAR CAN Bus [+] 1 Serial Data	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—

K157 Video Processing Module X2 (UV2 / UXA - UVB)



6154799

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 84172962
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

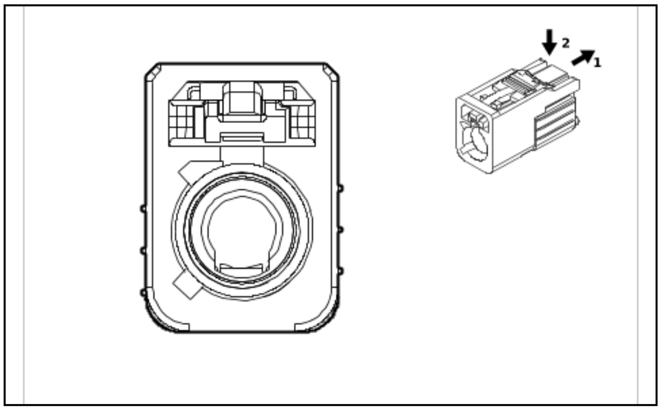
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X2 (UV2 / UXA - UVB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BK	(1) 1350	(1) Ground	(1) I	(1) —

K157 Video Processing Module X3 (UXA)



5630785

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516049
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BN)

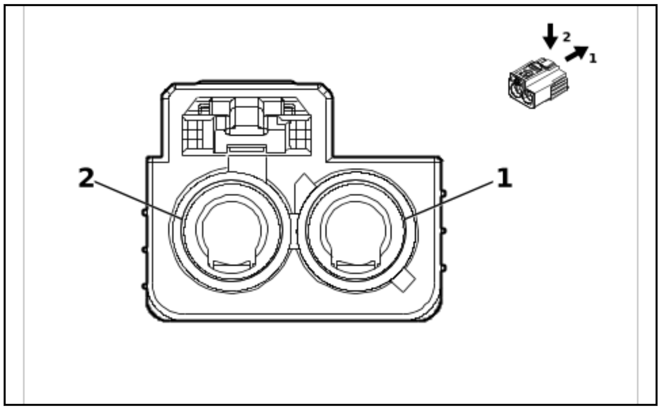
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X3 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Video Processing Module Coaxial Video Signal	I	—

K157 Video Processing Module X4 (((UV2 - (UVB & UXA)))



5810836

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516082
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BG)

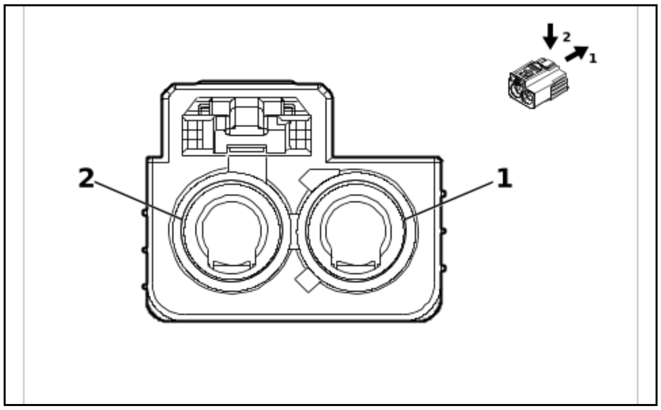
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X4 (((UV2 - (UVB & UXA)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(1) 1	(1) 0.1	(1) Coax Cable	(1) 11352	(1) Underbody Camera 2 LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	(1) I	(1) —

K157 Video Processing Module X4 (UXA)



5810832

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 13516079
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BN)

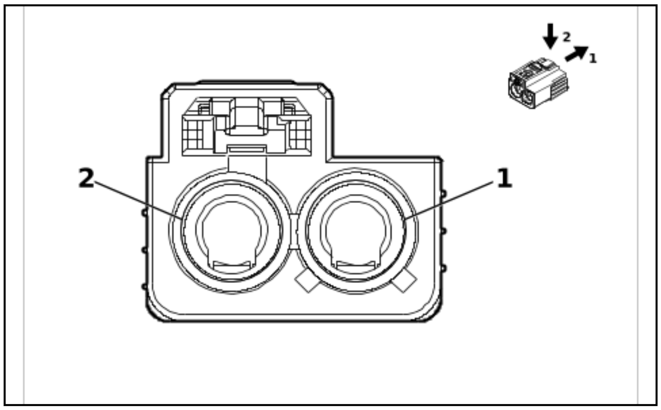
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X4 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	I	—

K157 Video Processing Module X5 (UV2 - (UVB & UXA))



5810835

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 13516083
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

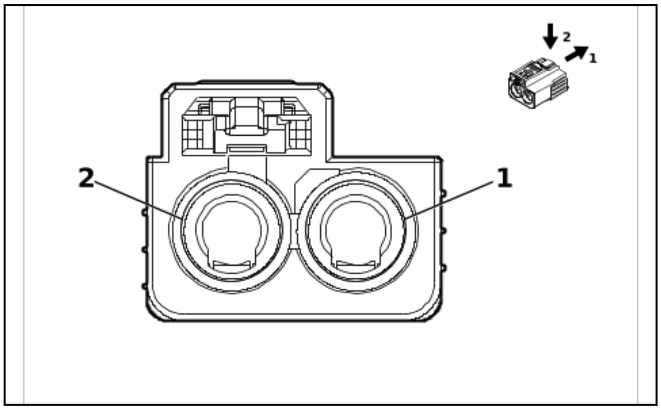
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X5 (UV2 - (UVB & UXA))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Front Wide Field of View Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	I	—

K157 Video Processing Module X5 (UXA)



5810827

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516078
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(GN)

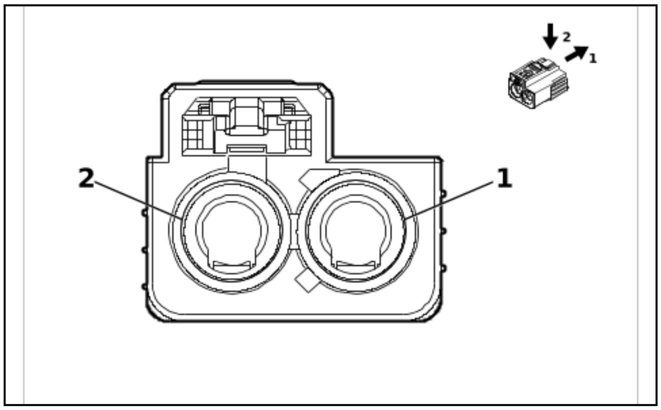
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X5 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(1) 1	(1) 0.1	(1) Coax Cable	(1) 11348	(1) Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0.1	(2) Coax Cable	(2) 4721	(2) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K157 Video Processing Module X6 (UXA)



5810832

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516079
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BN)

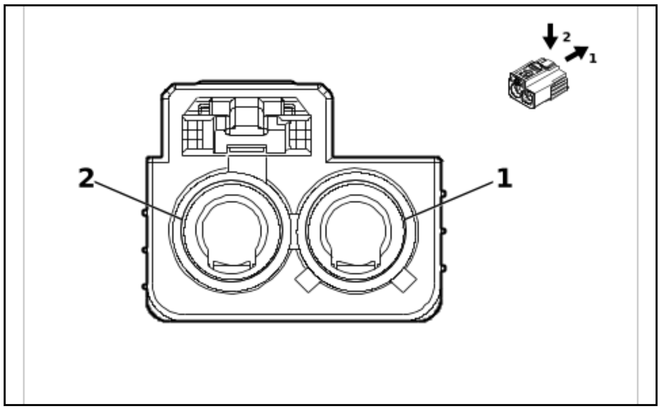
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X6 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(1) 1	(1) 0.01	(1) Coax Cable	(1) 4724	(1) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0.01	(2) Coax Cable	(2) 4725	(2) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K157 Video Processing Module X7 (UXA)



5810835

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516083
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

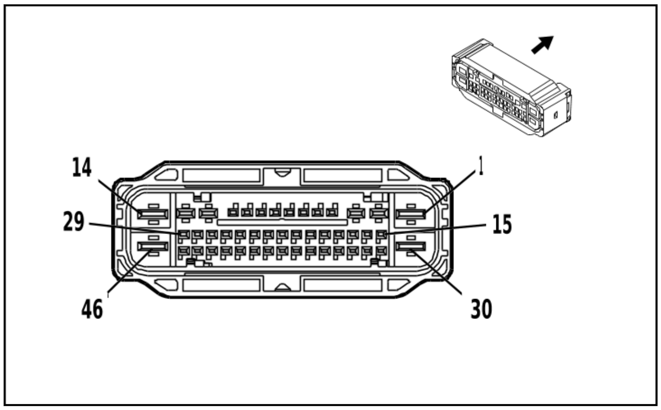
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X7 (UXA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(1) 1	(1) 0.01	(1) Coax Cable	(1) 4722	(1) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0.01	(2) Coax Cable	(2) 4721	(2) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K160 Brake System Control Module



4162046

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35740396
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

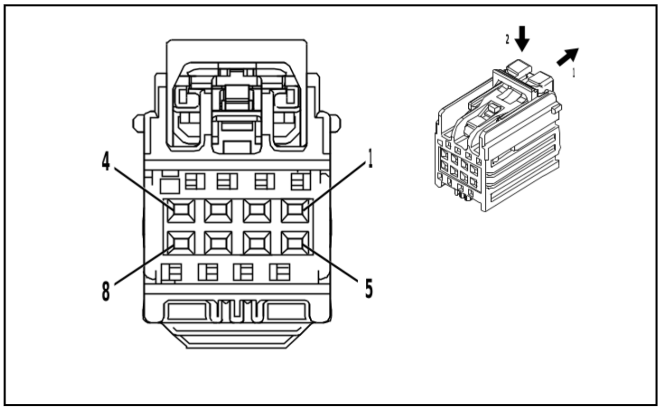
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575368	J-35616-35 (VT)	J-38125-556
II	19370818	J-35616-12 (BU)	J-38125-553
III	84634921	J-35616-42 (RD)	J-38125-212

K160 Brake System Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 6	(1) BK	(1) 150	(1) Ground	(1) III	(1) —
(2) 2	(2) 2.5	(2) WH	(2) 2001	(2) Left Park Brake Motor Apply Control	(2) I	(2) —
(3) 3	(3) 2.5	(3) GY / BK	(3) 4369	(3) Left Park Brake Motor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / WH	(4) 7064	(4) Left Front Wheel Speed Sensor Control	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY	(5) 830	(5) Left Front Wheel Speed Sensor Signal	(5) II	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) VT / WH	(9) 639	(9) Run/Crank Ignition 1 Voltage	(9) II	(9) —
(10) 10	(10) 0.5	(10) GY / BN	(10) 7065	(10) Right Front Wheel Speed Sensor Control	(10) II	(10) —
(11) 11	(11) 0.5	(11) YE	(11) 872	(11) Right Front Wheel Speed Sensor Signal	(11) II	(11) —
(12) 12	(12) 2.5	(12) GN / VT	(12) 1988	(12) Right Park Brake Motor Apply Control	(12) I	(12) —
(13) 13	(13) 2.5	(13) GY	(13) 4368	(13) Right Park Brake Motor Low Reference	(13) I	(13) —
(14) 14	(14) 6	(14) RD / BN	(14) 440	(14) Battery Positive Voltage	(14) III	(14) —
(15) 15	(15) 0.5	(15) GY / BK	(15) 7127	(15) Left Rear Wheel Speed Sensor Control	(15) II	(15) —
(16) 16	(16) 0.5	(16) BU	(16) 884	(16) Left Rear Wheel Speed Sensor Signal	(16) II	(16) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(17) 17	(17) 0.5	(17) BU / BK	(17) 4977	(17) AUTOSAR CAN Bus [+] 3 Serial Data	(17) II	(17) —
(18) 18	(18) 0.5	(18) WH	(18) 4976	(18) AUTOSAR CAN Bus [-] 3 Serial Data	(18) II	(18) —
(19) 19	(19) 0.5	(19) YE / BK	(19) 2224	(19) Trailer Brake Enable Signal	(19) II	(19) —
(20) 20	(20) 0.5	(20) WH / BK	(20) 2223	(20) Trailer Brake Apply Signal	(20) II	(20) —
21 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) GN / YE	(23) 2731	(23) Brake System Control Module LIN Bus 1	(23) II	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.5	(25) BU / YE	(25) 4979	(25) AUTOSAR CAN Bus [+] 2 Serial Data	(25) II	(25) —
(26) 26	(26) 0.5	(26) WH	(26) 4978	(26) AUTOSAR CAN Bus [-] 2 Serial Data	(26) II	(26) —
(27) 27	(27) 0.5	(27) GN / YE	(27) 1616	(27) Rear Brake Pad Wear Sensor Signal	(27) II	(27) —
(28) 28	(28) 0.5	(28) GY / YE	(28) 7128	(28) Right Rear Wheel Speed Sensor Control	(28) II	(28) —
(29) 29	(29) 0.5	(29) VT	(29) 882	(29) Right Rear Wheel Speed Sensor Signal	(29) II	(29) —
(30) 30	(30) 6	(30) BK	(30) 3550	(30) Ground	(30) III	(30) —
(31) 31	(31) 0.5	(31) GN / GY	(31) 333	(31) Brake Fluid Level Signal	(31) II	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.5	(33) BU / BK	(33) 4977	(33) AUTOSAR CAN Bus [+] 3 Serial Data	(33) II	(33) —
(34) 34	(34) 0.5	(34) WH	(34) 4976	(34) AUTOSAR CAN Bus [-] 3 Serial Data	(34) II	(34) —
(35) 35	(35) 0.5	(35) BN / BU	(35) 1602	(35) Front Brake Pad Wear Sensor Signal	(35) II	(35) —
(36) 36	(36) 0.5	(36) GN / BU	(36) 2733	(36) Brake System Control Module LIN Bus 2	(36) II	(36) —
37 - 40	—	—	—	Not Occupied	—	—
(41) 41	(41) 0.5	(41) BU / YE	(41) 4979	(41) AUTOSAR CAN Bus [+] 2 Serial Data	(41) II	(41) —
(42) 42	(42) 0.5	(42) WH	(42) 4978	(42) AUTOSAR CAN Bus [-] 2 Serial Data	(42) II	(42) —
43 - 45	—	—	—	Not Occupied	—	—
(46) 46	(46) 6	(46) RD / WH	(46) 342	(46) Battery Positive Voltage	(46) III	(46) —

K182 Parking Assist Control Module X1



4280711

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-2895-40
- Service Connector: 19355209
- Description: 8-Way F 0.64 Kaizen Series(GY)

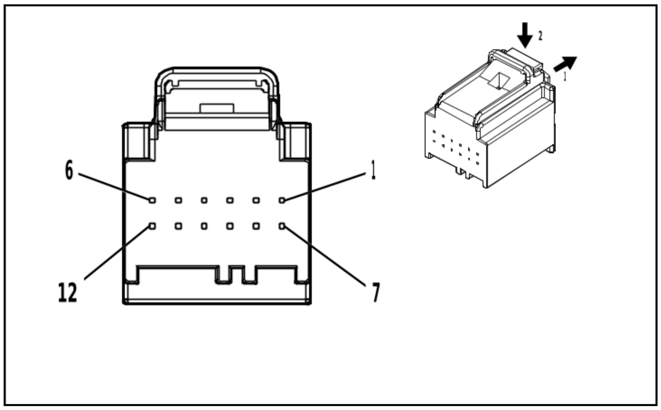
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required
II	Not required	No Tool Required	No Tool Required

K182 Parking Assist Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / WH	(1) 4740	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 4986	(2) AUTOSAR CAN Bus [-] 1 Serial Data	(2) II	(2) —
(3) 3	(3) 0.35	(3) BU	(3) 4987	(3) AUTOSAR CAN Bus [+] 1 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU	(4) 4987	(4) AUTOSAR CAN Bus [+] 1 Serial Data	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 2151	(6) Signal Ground	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) WH	(8) 4986	(8) AUTOSAR CAN Bus [-] 1 Serial Data	(8) I	(8) —

K182 Parking Assist Control Module X2



5095565

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 31410-0125
- Service Connector: 13525987
- Description: 12-Way F 0.64 Series(BK)

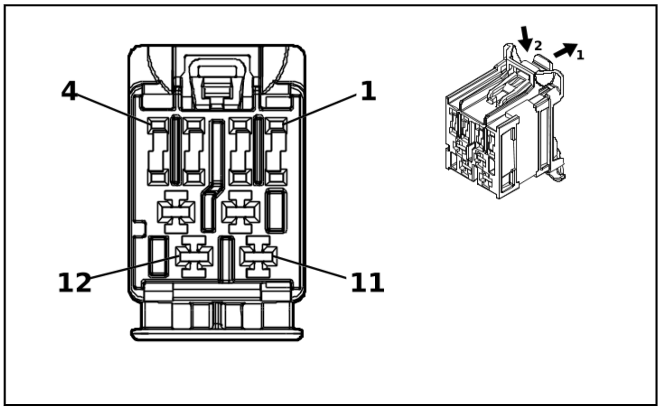
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13584547	J-35616-64B (L-BU)	J-38125-215A

K182 Parking Assist Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) YE / WH	(2) 2377	(2) Right Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE	(3) 2375	(3) Left Rear Outer Parking Assist Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 2374	(4) Object Sensor Voltage Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / VT	(5) 2378	(5) Right Rear Outer Parking Assist Sensor Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / BU	(6) 2376	(6) Left Rear Middle Parking Assist Sensor Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) BK / GY	(8) 2379	(8) Object Sensor Low Reference	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—

K219 Lighting Control Module X1



5203784

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0003
- Service Connector: 13509990
- Description: 12-Way F 1.2, 2.8 stAK50h Series(L-PU)

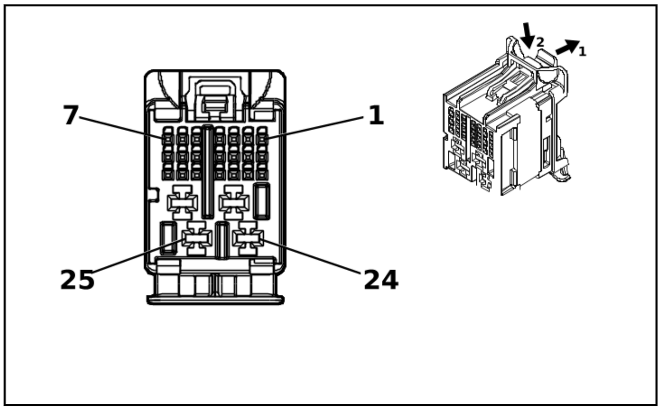
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84729890	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 7538	(1) Left Front DRL Control	(1) I	(1) —
2 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BU / WH	(5) 1314	(5) Left Front Turn Signal Lamp Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / WH	(6) 24	(6) Backup Lamp Control	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) WH / VT	(8) 1430	(8) Exterior Courtesy Lamp Control	(8) I	(8) —
(9) 9	(9) 1.5	(9) RD / GY	(9) 1740	(9) Battery Positive Voltage	(9) II	(9) —
(10) 10	(10) 0.75	(10) YE	(10) 712	(10) Left Headlamp Low Beam Control	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.75	(12) WH	(12) 711	(12) Left Headlamp High Beam Control	(12) II	(12) —

K219 Lighting Control Module X2



5203807

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0012
- Service Connector: 13534966
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(GY with GY Inner Connector)

Terminal Part Information

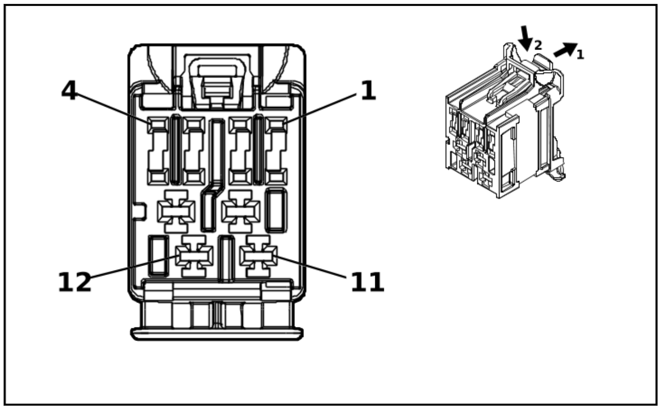
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / YE	(1) 1254	(1) Left Front Park Lamp Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / GN	(2) 1253	(2) Right Front Park Lamp Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / GY	(3) 2268	(3) Windshield Washer Relay Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / BN	(4) 38	(4) Backup Lamp Relay Control	(4) I	(4) —
5 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) BN / GN	(10) 196	(10) Windshield Wiper Motor Park Switch Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) VT / BK	(11) 6568	(11) Front Turn Signal Lamp Feedback Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 91	(12) Windshield Wiper Motor Relay Coil Control	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) VT	(14) 185	(14) Low Washer Fluid Indicator Control	(14) I	(14) —
15 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) WH / BN	(19) 7055	(19) Auxiliary Park Lamp Relay Control	(19) I	(19) —
(20) 20	(20) 0.35	(20) WH / YE	(20) 7545	(20) Right Front Turn Signal Lamp Feedback Signal	(20) I	(20) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(21) 21	(21) 0.35	(21) WH / VT	(21) 860	(21) Windshield Wiper Switch High Signal	(21) I	(21) —
(22) 22	(22) 1.5	(22) RD / GN	(22) 1540	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 1	(23) RD / VT	(23) 1640	(23) Battery Positive Voltage	(23) II	(23) —
24 - 25	—	—	—	Not Occupied	—	—

K219 Lighting Control Module X3



5203797

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0002
- Service Connector: 13509989
- Description: 12-Way F 1.2, 2.8 stAK50h Series(GN)

Terminal Part Information

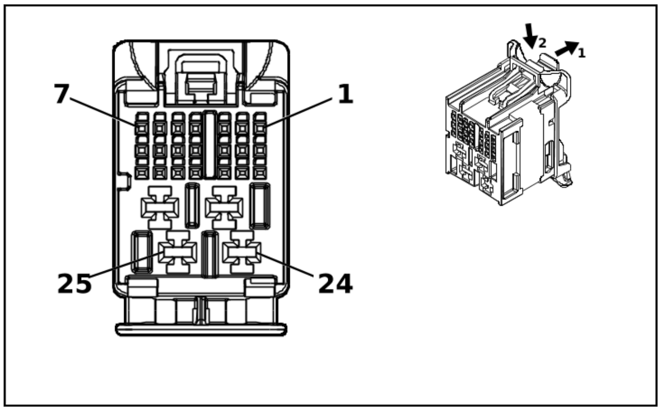
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84729890	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BU / BN	(4) 7539	(4) Right Front DRL Control	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) GN / VT	(6) 1315	(6) Right Front Turn Signal Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / GY	(7) 5061	(7) Left Front Fog Lamp Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 1.5	(9) RD / BN	(9) 1440	(9) Battery Positive Voltage	(9) II	(9) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(10) 10	(10) 1.5	(10) RD / WH	(10) 1340	(10) Battery Positive Voltage	(10) II	(10) —
(11) 11	(11) 0.75	(11) WH	(11) 311	(11) Right Headlamp High Beam Control	(11) II	(11) —
(12) 12	(12) 1	(12) YE	(12) 312	(12) Right Headlamp Low Beam Control	(12) II	(12) —

K219 Lighting Control Module X4



5203416

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0015
- Service Connector: 13534969
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(PU with GY Inner Connector)

Terminal Part Information

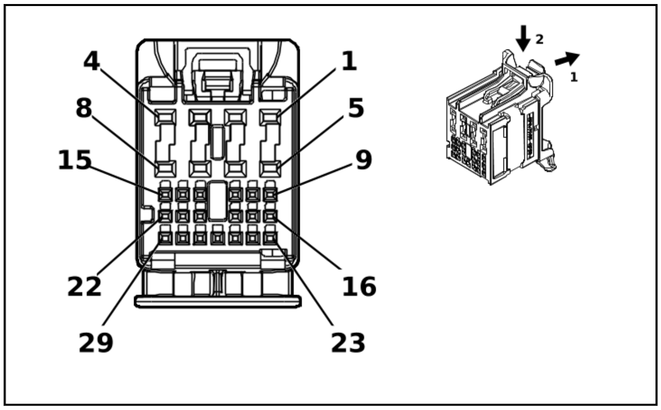
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BU / GN	(3) 4103	(3) AUTOSAR CAN Bus [+] 9 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / GN	(4) 4102	(4) AUTOSAR CAN Bus [-] 9 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / GN	(5) 4103	(5) AUTOSAR CAN Bus [+] 9 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH / GN	(6) 4102	(6) AUTOSAR CAN Bus [-] 9 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH / BU	(7) 6311	(7) Cruise/ETC/TCC Brake Signal	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) WH / GN	(10) 4102	(10) AUTOSAR CAN Bus [-] 9 Serial Data	(10) I	(10) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(11) 11	(11) 0.35	(11) BU / GN	(11) 4103	(11) AUTOSAR CAN Bus [+] 9 Serial Data	(11) I	(11) —
12 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 1	(22) RD / BN	(22) 1140	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 1.5	(23) BK / WH	(23) 451	(23) Signal Ground	(23) II	(23) —
(24) 24	(24) 1	(24) RD / BU	(24) 1240	(24) Battery Positive Voltage	(24) II	(24) —
(25) 25	(25) 1.5	(25) BK / WH	(25) 451	(25) Signal Ground	(25) II	(25) —

K219 Lighting Control Module X5



5203373

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 160029-0013
- Service Connector: 13534975
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BU with GY Inner Connector)

Terminal Part Information

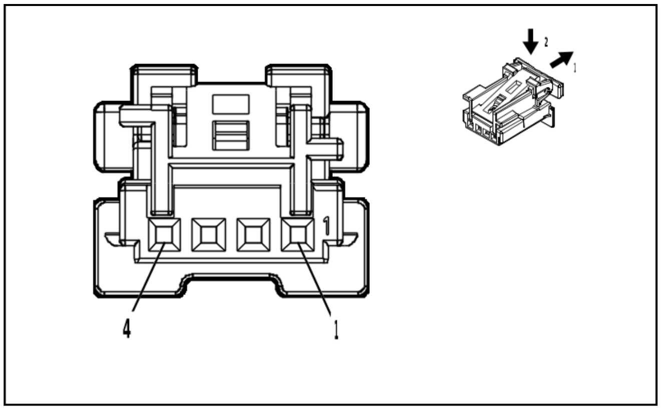
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K219 Lighting Control Module X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BN / GY	(2) 6995	(2) Right Rear Park Lamp Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) GY / YE	(3) 7542	(3) Left Rear Stop Lamp Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU / VT	(4) 1335	(4) Right Rear Turn Signal Lamp Control 2	(4) II	(4) —
5	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) BN / BU	(6) 6993	(6) Left Rear Park Lamp Control	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH / YE	(7) 7541	(7) Right Rear Stop Lamp Control	(7) II	(7) —
(8) 8	(8) 0.5	(8) BU / WH	(8) 1334	(8) Left Rear Turn Signal Lamp Control 2	(8) II	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) GN / WH	(10) 2270	(10) Rear Window Washer Relay Control	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY	(11) 1715	(11) Windshield Wiper Switch High Signal	(11) I	(11) —
(13) 13	(13) 0.35	(13) GN / BN	(13) 319	(13) Right Rear Trailer Stop/Turn Lamp Control	(13) I	(13) —
14 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) VT / WH	(18) 1139	(18) Run/Crank Ignition 1 Voltage	(18) I	(18) —
20 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.35	(25) BN / YE	(25) 820	(25) Center High Mounted Stop Lamp Supply Voltage	(25) I	(25) —
26 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) GN / YE	(28) 6846	(28) Rear License Plate Lamp Control	(28) I	(28) —
(29) 29	(29) 0.35	(29) YE / BU	(29) 318	(29) Left Rear Trailer Stop/Turn Lamp Control	(29) I	(29) —

M4P Programmable Air Inlet Valve Actuator



4997407

Connector Part Information

- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

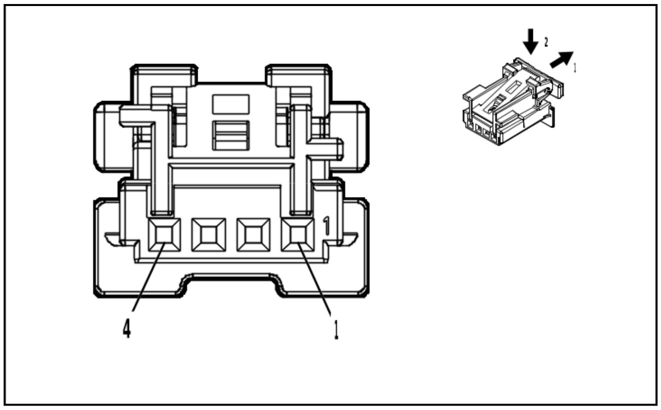
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M4P Programmable Air Inlet Valve Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 2050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M6PL Programmable Temperature Valve Actuator - Left



4997407

Connector Part Information

- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

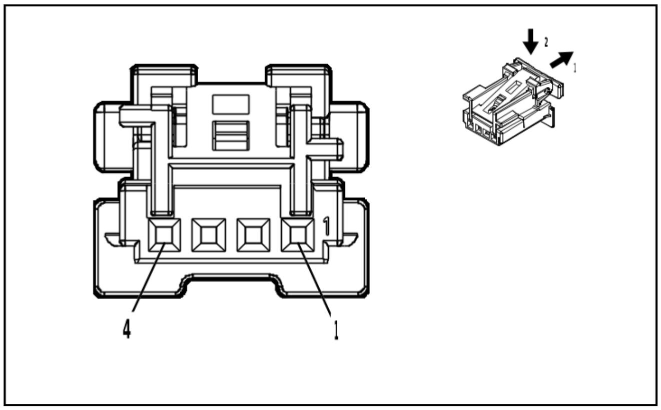
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M6PL Programmable Temperature Valve Actuator - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 2050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M6PR Programmable Temperature Valve Actuator - Right



4997407

Connector Part Information

- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

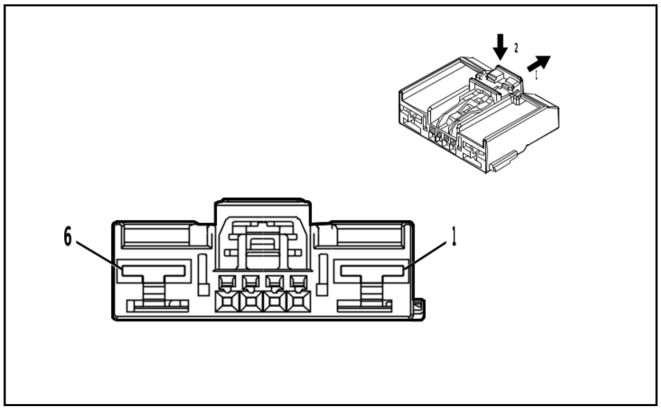
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M6PR Programmable Temperature Valve Actuator - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 2050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M8 Blower Motor



4650258

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-7139-30
- Service Connector: 19356432
- Description: 6-Way F 0.64, 6.3 Series(BK)

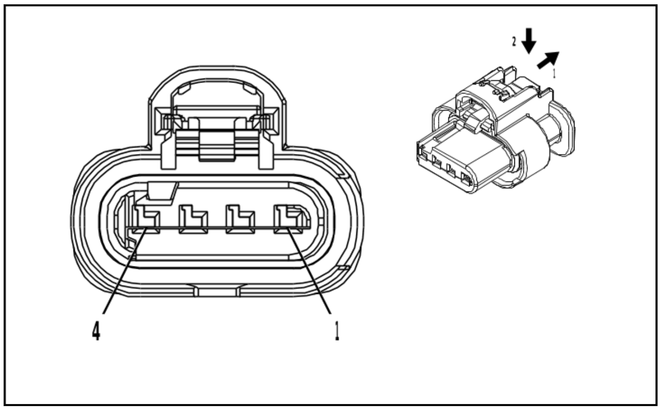
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

M8 Blower Motor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) RD / WH	(1) 2040	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / GY	(2) 754	(2) Blower Motor Speed Control	(2) II	(2) —
(3) 3	(3) 0.35	(3) GN / BU	(3) 761	(3) Blower Speed Feedback Signal	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 2.5	(6) BK	(6) 4250	(6) Ground	(6) I	(6) —

M26 Front Drive Axle Actuator (NP0 / NQH)



4210809

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

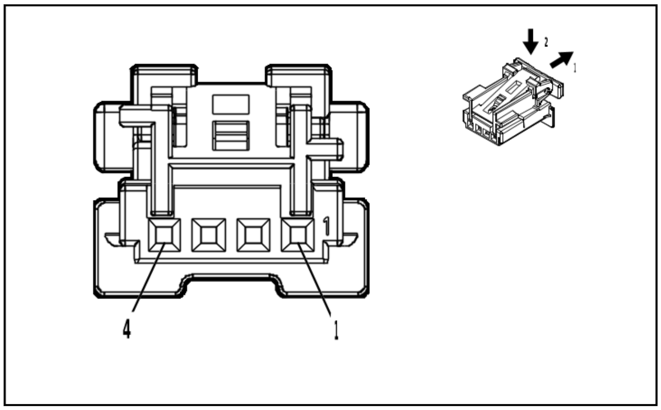
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M26 Front Drive Axle Actuator (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 8016	(1) Secondary Axle Motor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BK	(2) 1570	(2) Front Axle Actuator Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 1695	(3) 4WD Locked Range Indicator Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 2250	(4) Ground	(4) I	(4) —

M37P Programmable Mode Valve Actuator



4997407

Connector Part Information

- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

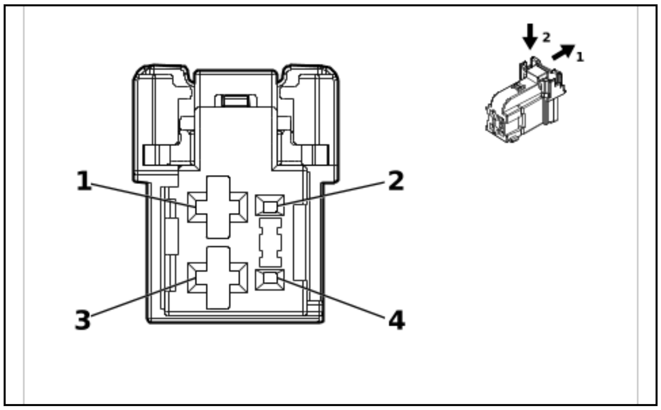
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M37P Programmable Mode Valve Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 2050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M50D Front Seat Tilt Adjuster Actuator - Driver (- A45)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

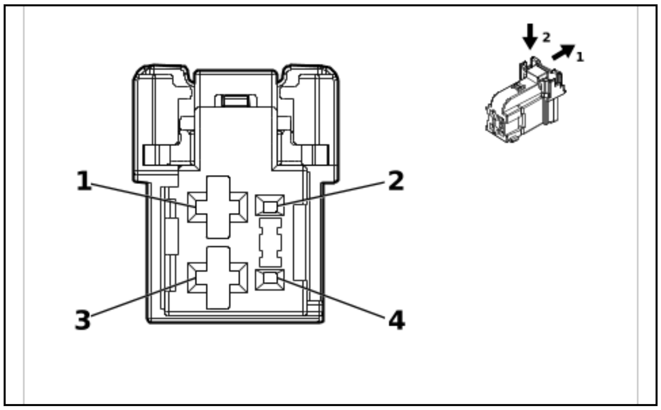
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50D Front Seat Tilt Adjuster Actuator - Driver (- A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / VT	(1) 287	(1) Driver Seat Front Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BN	(3) 286	(3) Driver Seat Front Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M50D Front Seat Tilt Adjuster Actuator - Driver (A45)



5410027

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

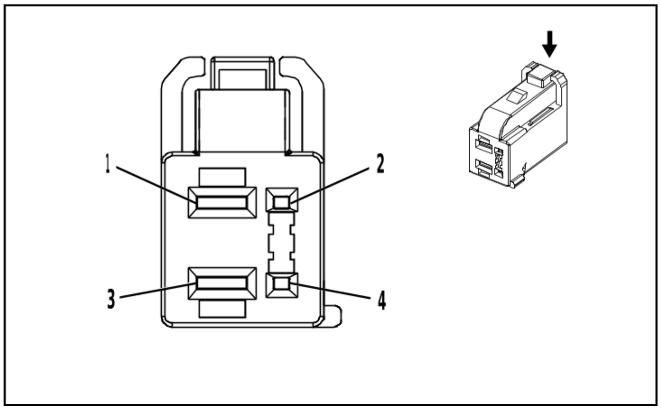
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50D Front Seat Tilt Adjuster Actuator - Driver (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / VT	(1) 287	(1) Driver Seat Front Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BN	(3) 286	(3) Driver Seat Front Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M51D Front Seat Adjuster Actuator - Driver



3683652

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

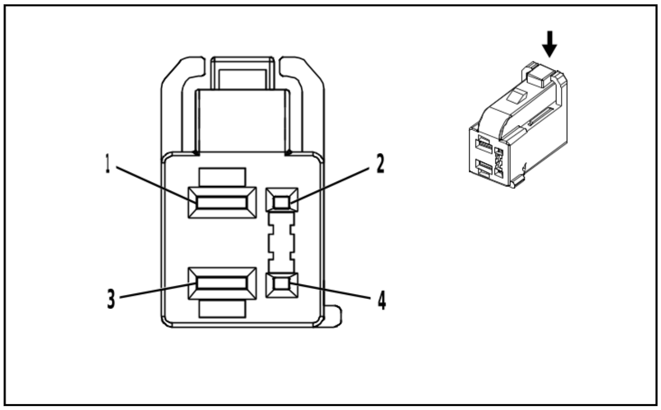
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M51D Front Seat Adjuster Actuator - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GY / GN	(1) 284	(1) Driver Seat Horizontal Motor Rearward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) YE / BU	(3) 285	(3) Driver Seat Horizontal Motor Forward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M51P Front Seat Adjuster Actuator - Passenger



3683652

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

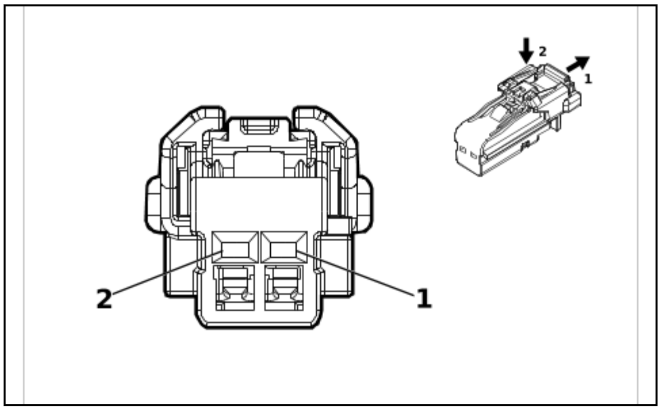
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M51P Front Seat Adjuster Actuator - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) YE / BU	(1) 290	(1) Passenger Seat Horizontal Motor Rearward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) YE / WH	(3) 296	(3) Passenger Seat Horizontal Motor Forward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M53D Front Seat Back Lumbar Motor - Driver



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

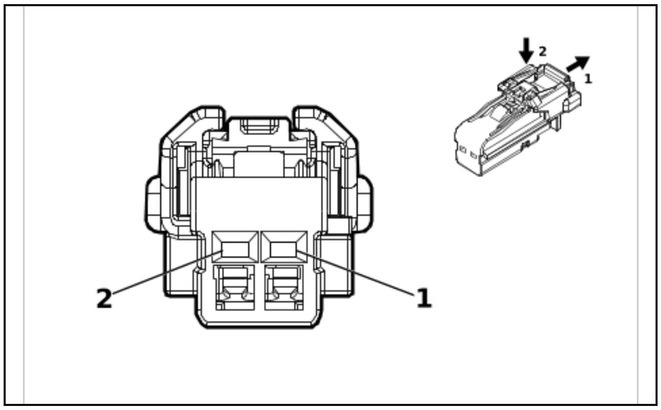
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

M53D Front Seat Back Lumbar Motor - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU	(1) 611	(1) Driver Seat Lumbar Support Motor Forward Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) VT	(2) 610	(2) Driver Seat Lumbar Support Motor Backward Control	(2) I	(2) —

M53P Front Seat Back Lumbar Motor - Passenger



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

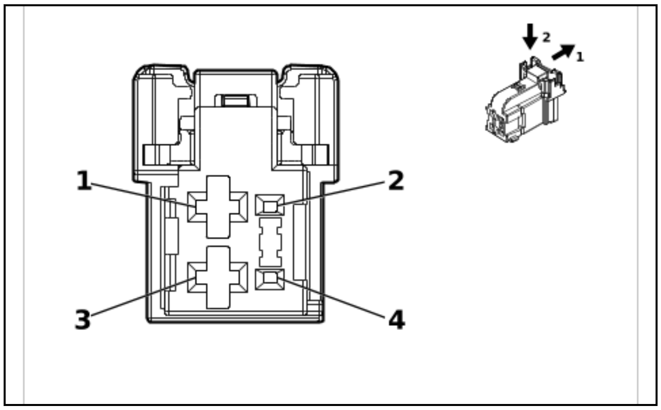
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M53P Front Seat Back Lumbar Motor - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BU	(1) 211	(1) Passenger Seat Lumbar Support Motor Forward Control	(1) I	(1) —
(2) 2	(2) 0	(2) VT	(2) 210	(2) Passenger Seat Lumbar Support Motor Backward Control	(2) I	(2) —

M55D Front Seat Vertical Adjuster Actuator - Driver



5410027

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

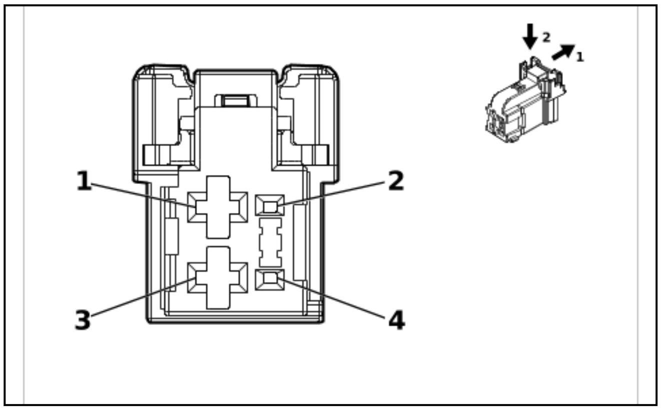
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M55D Front Seat Vertical Adjuster Actuator - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GY / BU	(1) 283	(1) Driver Seat Rear Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) YE	(3) 282	(3) Driver Seat Rear Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M55P Front Seat Vertical Adjuster Actuator - Passenger



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

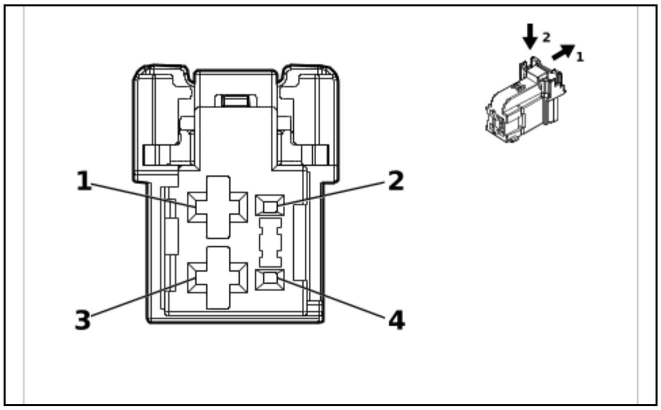
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M55P Front Seat Vertical Adjuster Actuator - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BU / WH	(1) 289	(1) Passenger Seat Rear Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) GN / WH	(3) 288	(3) Passenger Seat Rear Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M56D Front Seat Recliner Actuator - Driver



5410027

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

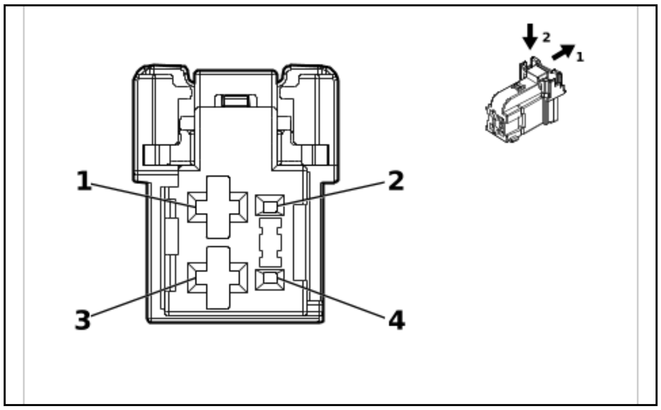
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M56D Front Seat Recliner Actuator - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / YE	(1) 276	(1) Driver Seat Recline Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) BU / YE	(3) 277	(3) Driver Seat Recline Motor Rearward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M56P Front Seat Recliner Actuator - Passenger



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

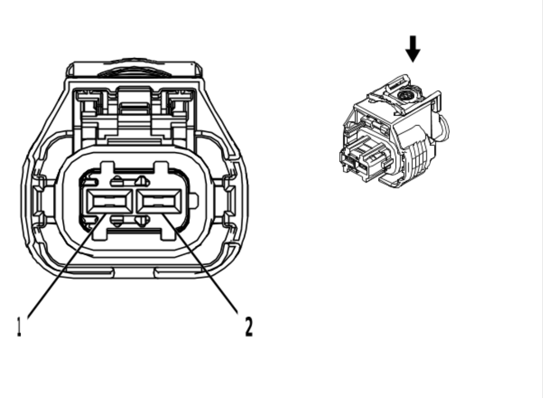
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M56P Front Seat Recliner Actuator - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) GN	(1) 76	(1) Passenger Seat Recline Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) BU / BN	(3) 77	(3) Passenger Seat Recline Motor Rearward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M64 Starter X1



2577394

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-928-405-714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

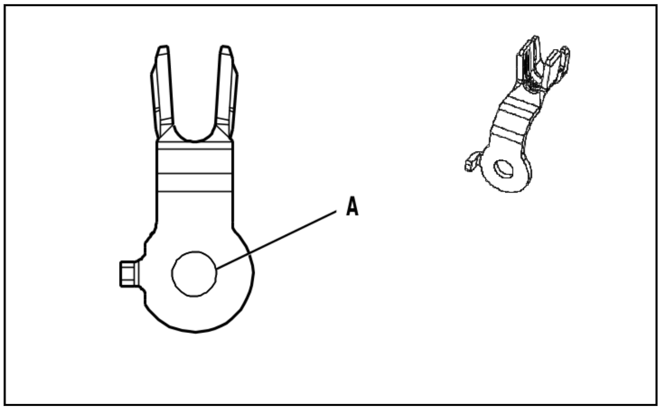
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M64 Starter X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE	(1) 6	(1) Starter Solenoid Crank Ignition Voltage	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / GN	(2) 4358	(2) Starter Pinion Solenoid Voltage	(2) I	(2) —

M64 Starter X2



5020399

Connector Part Information
- Harness Type: Battery Negative Cable
- OEM Connector: 13516388
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

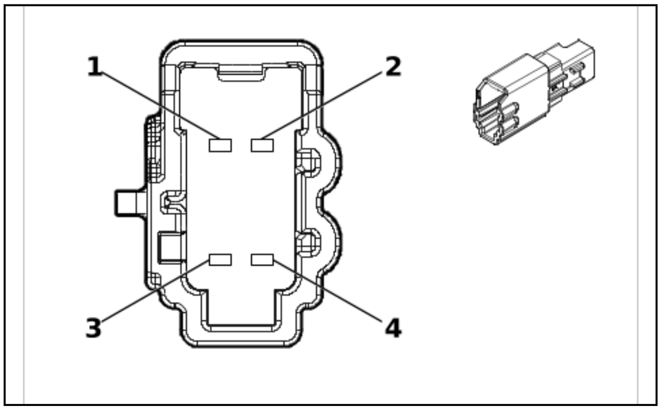
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M64 Starter X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

M73A Front Seat Back Ventilation Blower - Driver



5423974

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

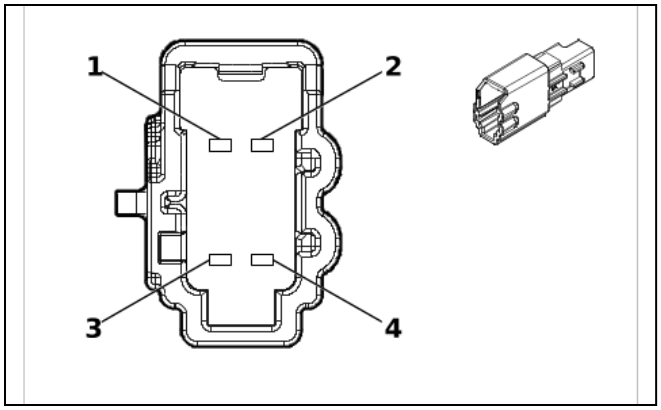
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

M73A Front Seat Back Ventilation Blower - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 839	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 5906	(2) Driver Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 3750	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73B Front Seat Back Ventilation Blower - Passenger (KU9)



5423974

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

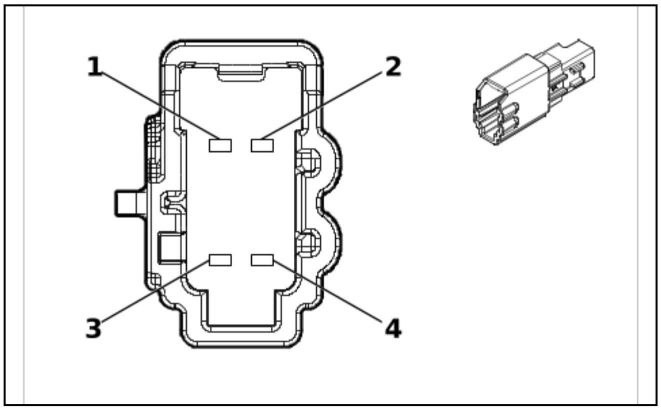
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

M73B Front Seat Back Ventilation Blower - Passenger (KU9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 839	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / WH	(2) 5908	(2) Passenger Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 4250	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73D Front Seat Cushion Ventilation Blower - Driver



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

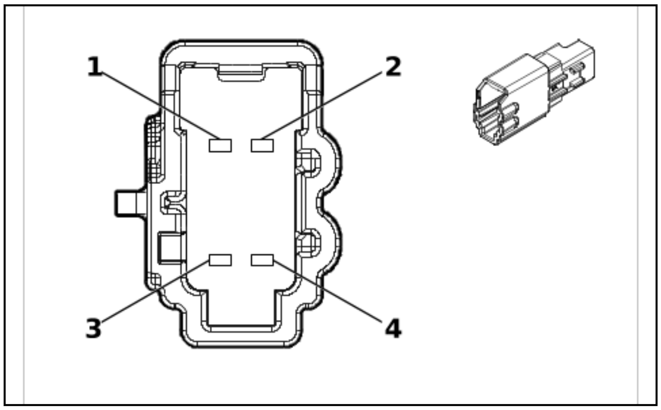
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

M73D Front Seat Cushion Ventilation Blower - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 839	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 5906	(2) Driver Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 3750	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73P Front Seat Cushion Ventilation Blower - Passenger (KU9)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

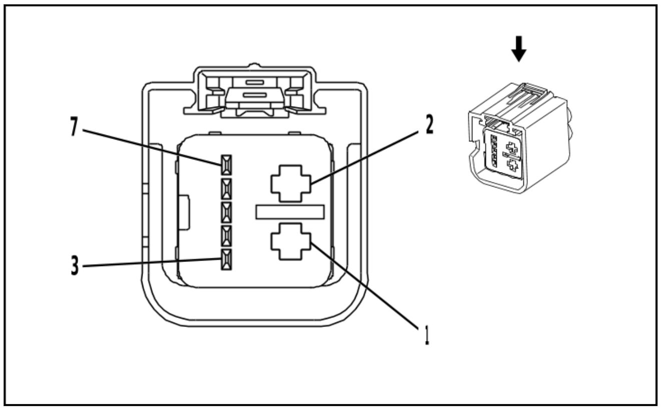
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

M73P Front Seat Cushion Ventilation Blower - Passenger (KU9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 839	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / WH	(2) 5908	(2) Passenger Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 4250	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M74D Front Side Door Window Regulator Motor - Driver



2282932

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed(GY)

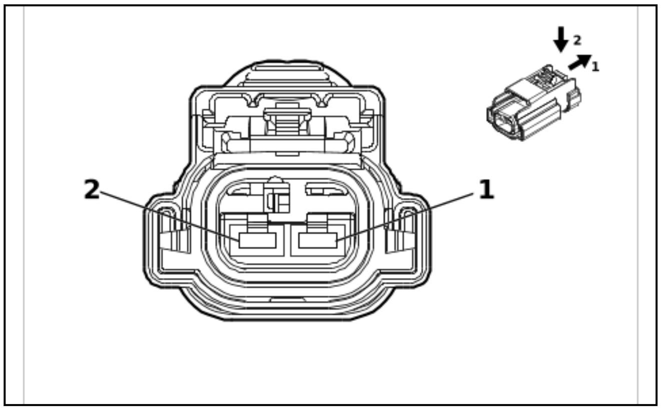
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

M74D Front Side Door Window Regulator Motor - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1150	(1) Ground	(1) I	(1) —
(2) 2	(2) 2.5	(2) RD / GY	(2) 3540	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.35	(3) GY / GN	(3) 2763	(3) Window Switch Left Front Up Signal	(3) II	(3) —
(4) 4	(4) 0.35	(4) GN / YE	(4) 6134	(4) Body Control Module LIN Bus 3	(4) II	(4) —
(5) 5	(5) 0.35	(5) GN	(5) 2766	(5) Power Window Switch Left Front Express Signal	(5) II	(5) —
(6) 6	(6) 0.35	(6) GY	(6) 745	(6) Left Front Door Ajar Switch Signal	(6) II	(6) —
(7) 7	(7) 0.35	(7) WH / BN	(7) 2764	(7) Window Switch Left Front Down Signal	(7) II	(7) —

M74LR Rear Side Door Window Regulator Motor - Left



5795169

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 13532186
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

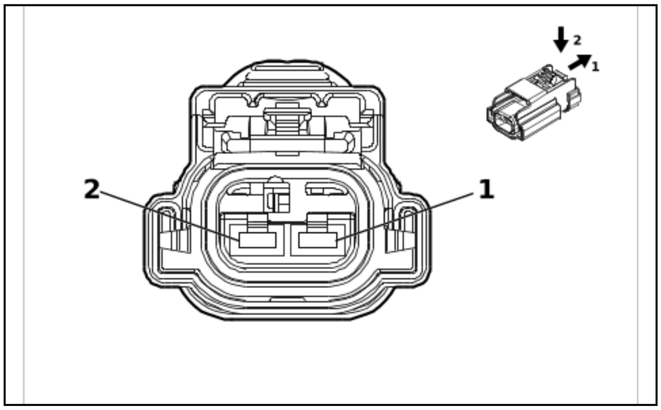
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M74LR Rear Side Door Window Regulator Motor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) BU / VT	(1) 668	(1) Left Rear Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) YE / BU	(2) 669	(2) Left Rear Window Motor Down Control	(2) I	(2) —

M74P Front Side Door Window Regulator Motor - Passenger



5795169

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

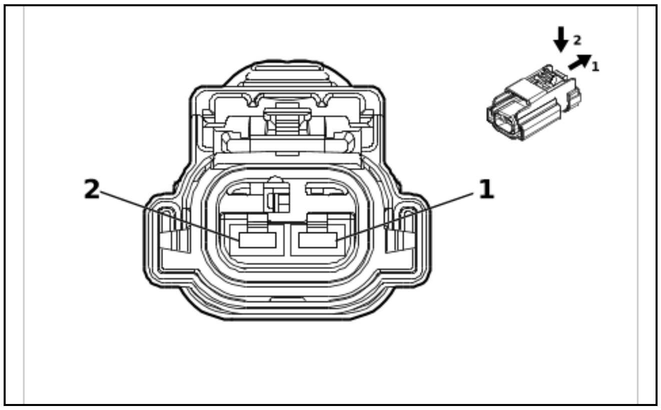
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M74P Front Side Door Window Regulator Motor - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) GN / GY	(1) 666	(1) Right Front Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) YE / BU	(2) 667	(2) Right Front Window Motor Down Control	(2) I	(2) —

M74RR Rear Side Door Window Regulator Motor - Right



5795169

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 13532186
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

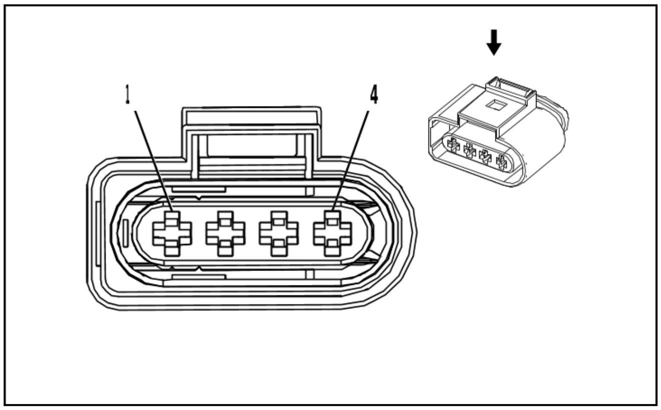
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M74RR Rear Side Door Window Regulator Motor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) BU / GY	(1) 670	(1) Right Rear Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) GN / BK	(2) 671	(2) Right Rear Window Motor Down Control	(2) I	(2) —

M75 Windshield Wiper Motor



2474722

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 638245-2
- Service Connector: 85596545
- Description: 4-Way F Junior Power Timer Series, Sealed(BK)

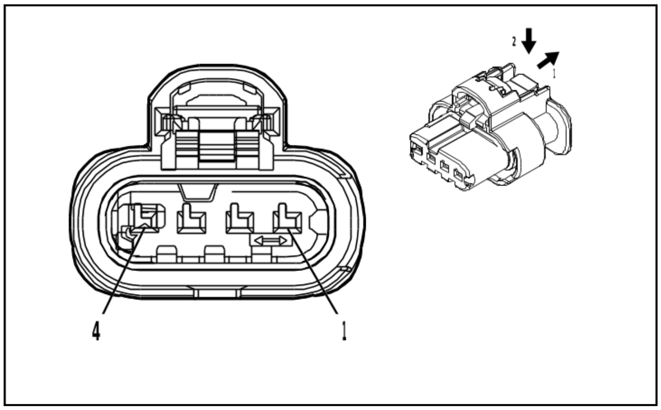
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M75 Windshield Wiper Motor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / GN	(1) 196	(1) Windshield Wiper Motor Park Switch Signal	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / BN	(2) 95	(2) Windshield Wiper Motor Low Speed Control	(2) I	(2) —
(3) 3	(3) 2.5	(3) BK	(3) 150	(3) Ground	(3) I	(3) —
(4) 4	(4) 2.5	(4) WH	(4) 92	(4) Windshield Wiper Motor High Speed Control	(4) I	(4) —

M96 Active Grille Air Shutter Actuator



4934614

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 13514087
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

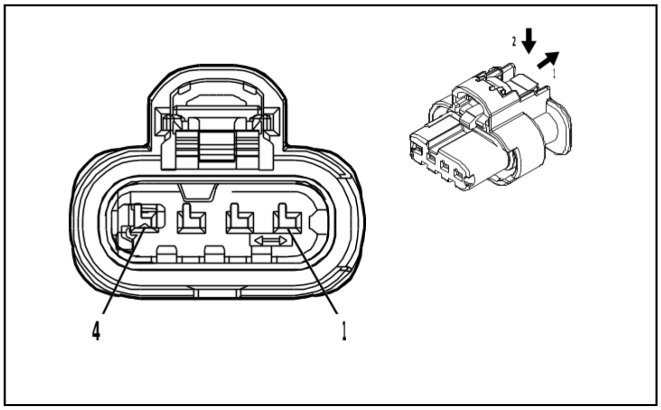
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M96 Active Grille Air Shutter Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5705	(1) Powertrain Main Relay Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 10806	(2) Engine Control Module LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BK	(4) 150	(4) Ground	(4) I	(4) —

M96B Active Grille Air Shutter Actuator 2



4934614

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

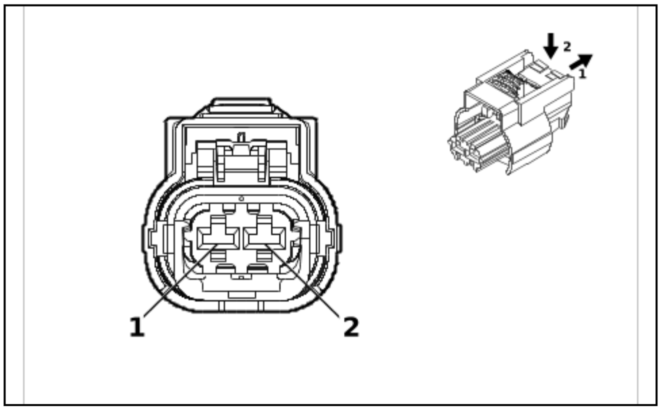
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M96B Active Grille Air Shutter Actuator 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5705	(1) Powertrain Main Relay Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 10806	(2) Engine Control Module LIN Bus 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 150	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 150	(4) Ground	(4) I	(4) —

M104L Parking Brake Actuator - Left



4992524

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 13532979
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

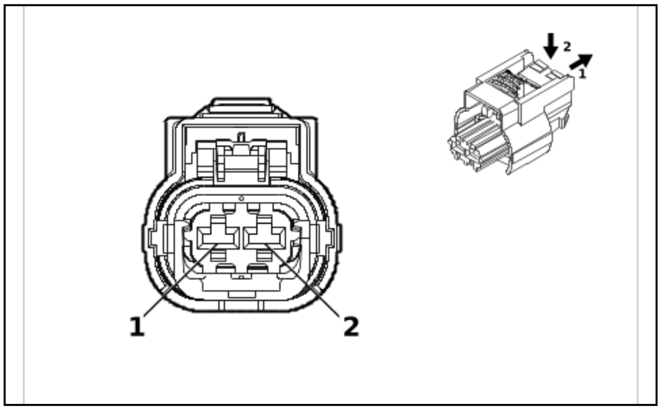
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M104L Parking Brake Actuator - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) WH	(1) 2001	(1) Left Park Brake Motor Apply Control	(1) I	(1) —
(2) 2	(2) 2.5	(2) GY / BK	(2) 4369	(2) Left Park Brake Motor Low Reference	(2) I	(2) —

M104R Parking Brake Actuator - Right



4992524

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 13532979
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

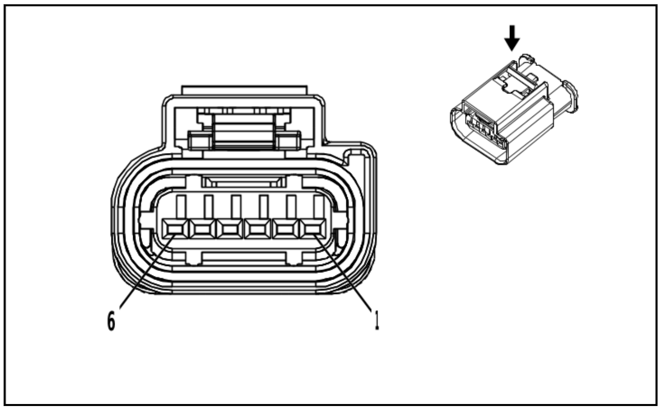
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M104R Parking Brake Actuator - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GN / VT	(1) 1988	(1) Right Park Brake Motor Apply Control	(1) I	(1) —
(2) 2	(2) 2.5	(2) GY	(2) 4368	(2) Right Park Brake Motor Low Reference	(2) I	(2) —

M128 Turbocharger Wastegate Actuator



3747579

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

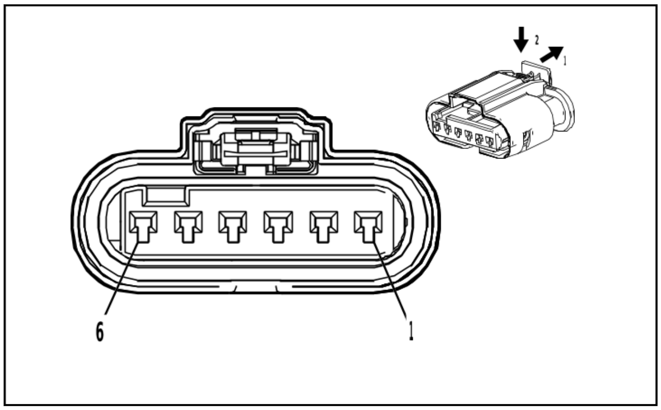
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M128 Turbocharger Wastegate Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 2590	(2) Turbocharger Wastegate Motor Feedback Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) WH / BU	(4) 2592	(4) Turbocharger Wastegate Motor Close Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) WH / BN	(5) 2591	(5) Turbocharger Wastegate Motor Open Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

M129A Intake Camshaft Profile Actuator 1



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

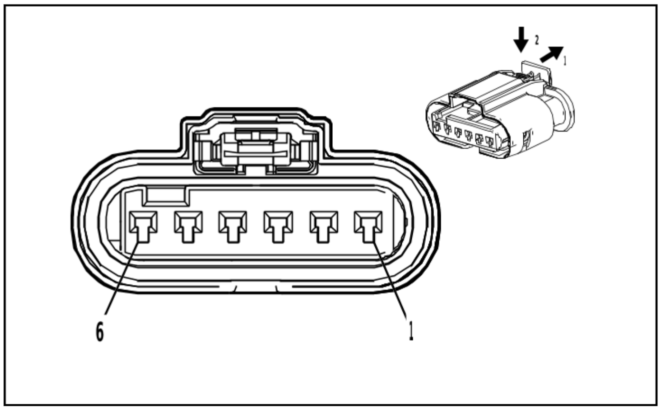
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129A Intake Camshaft Profile Actuator 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 3615	(1) Intake Camshaft Profile Actuator 1 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 3589	(2) Intake Camshaft Profile Actuator 1 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BK	(6) 3616	(6) Intake Camshaft Profile Actuator 1 Control B	(6) I	(6) —

M129B Intake Camshaft Profile Actuator 2



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

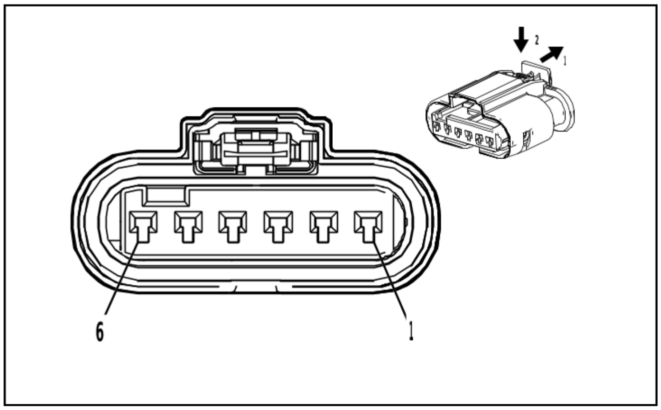
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129B Intake Camshaft Profile Actuator 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 3585	(1) Intake Camshaft Profile Actuator 2 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 3592	(2) Intake Camshaft Profile Actuator 2 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU	(6) 3584	(6) Intake Camshaft Profile Actuator 2 Control B	(6) I	(6) —

M129C Intake Camshaft Profile Actuator 3



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

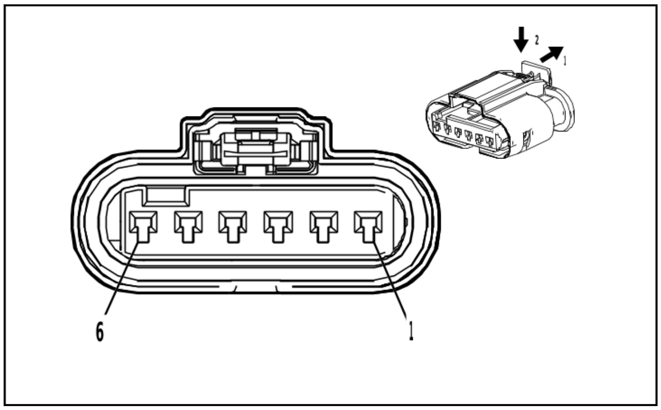
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129C Intake Camshaft Profile Actuator 3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BU	(1) 3587	(1) Intake Camshaft Profile Actuator 3 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 3593	(2) Intake Camshaft Profile Actuator 3 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GY	(6) 3586	(6) Intake Camshaft Profile Actuator 3 Control B	(6) I	(6) —

M129D Intake Camshaft Profile Actuator 4



3960142

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

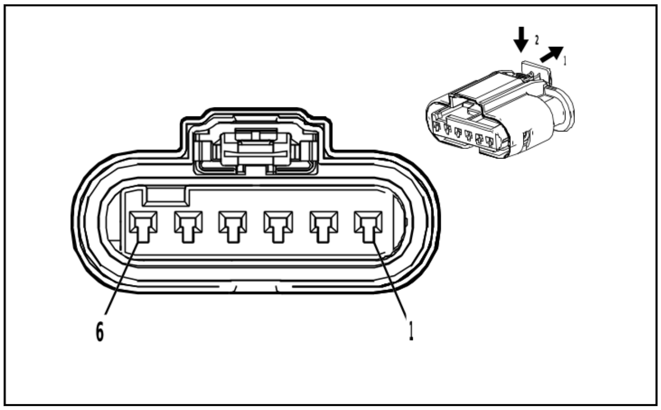
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129D Intake Camshaft Profile Actuator 4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 1402	(1) Intake Camshaft Profile Actuator 4 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 1702	(2) Intake Camshaft Profile Actuator 4 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GY / YE	(6) 1502	(6) Intake Camshaft Profile Actuator 4 Control B	(6) I	(6) —

M130B Exhaust Camshaft Profile Actuator 2



3960142

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

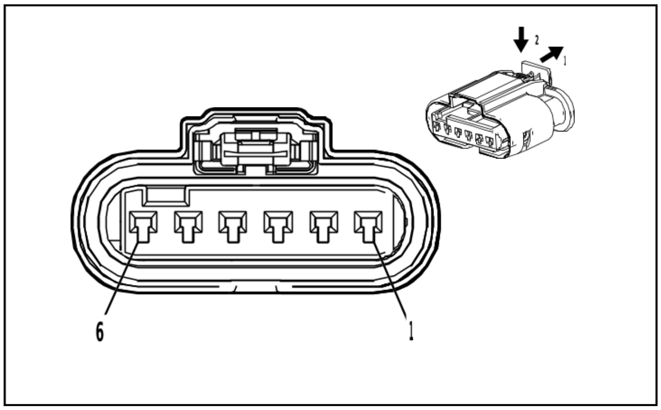
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M130B Exhaust Camshaft Profile Actuator 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / VT	(1) 6265	(1) Exhaust Camshaft Profile Actuator 2 Control B	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BK	(2) 6266	(2) Exhaust Camshaft Profile Actuator 2 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) VT / BK	(6) 6264	(6) Exhaust Camshaft Profile Actuator 2 Control A	(6) I	(6) —

M130C Exhaust Camshaft Profile Actuator 3



3960142

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

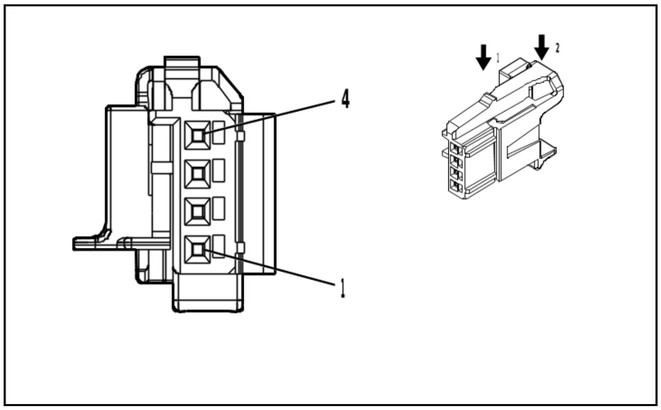
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M130C Exhaust Camshaft Profile Actuator 3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 6262	(1) Exhaust Camshaft Profile Actuator 3 Control B	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 6263	(2) Exhaust Camshaft Profile Actuator 3 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BN	(6) 6261	(6) Exhaust Camshaft Profile Actuator 3 Control A	(6) I	(6) —

P2 Automatic Transmission Control Indicator



5092142

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness Extension Harness
- OEM Connector: 2294399-5
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 MQS Series

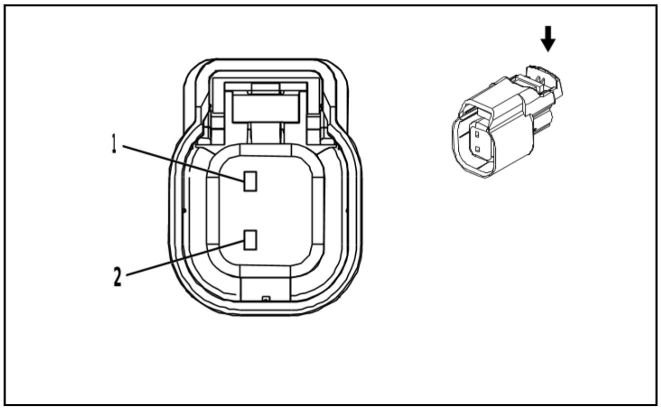
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

P2 Automatic Transmission Control Indicator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / VT	(1) 4759	(1) Transmission Shift Lever Position Indicator 2 Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BU	(2) 6133	(2) Body Control Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

P13 Horn X1



2792100

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 34062-0027
- Service Connector: 87821959
- Description: 2-Way F 1.5 Series, Sealed(BK)

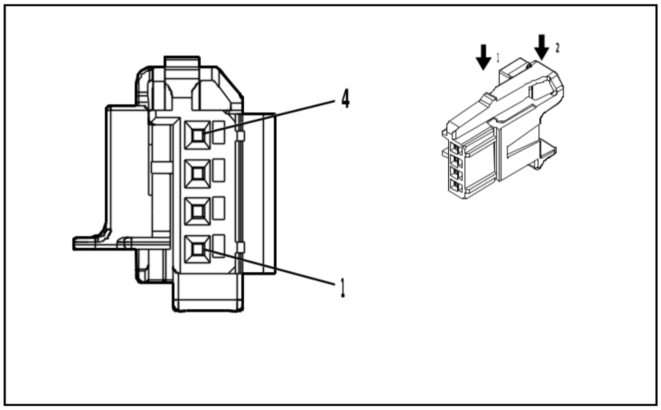
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P13 Horn X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 250	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GY	(2) 29	(2) Horn Control	(2) I	(2) —

P14 Instrument Panel Airbag Arming Status Display



5092142

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 2294399-5
- Service Connector: 84766302
- Description: 4-Way F 0.64 MQS Series

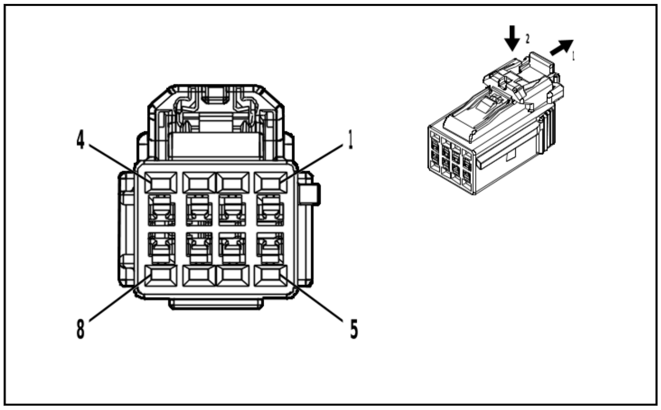
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

P14 Instrument Panel Airbag Arming Status Display

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / VT	(1) 4040	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 2307	(2) Passenger Air Bag On Indicator Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN	(3) 2308	(3) Passenger Air Bag Off Indicator Control	(3) I	(3) —
(4) 4	(4) 0.35 (4) 0.35	(4) GN (4) VT / WH	(4) 3118 (4) 5234	(4) Roof Rail Air Bag Disable Indicator Control (4) Passenger Seat Belt Indicator Control	(4) I (4) I	(4) C91 (4) - C91

P16 Instrument Panel Cluster Control Module X1



5086387

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series(BK)

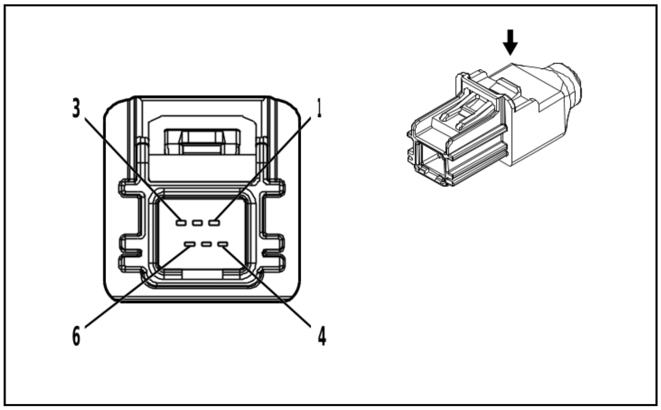
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P16 Instrument Panel Cluster Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 1440	(1) Battery Positive Voltage	(1) I	(1) —
2 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK	(8) 2050	(8) Ground	(8) I	(8) —

P16 Instrument Panel Cluster Control Module X2



4806625

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551197
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(BK)

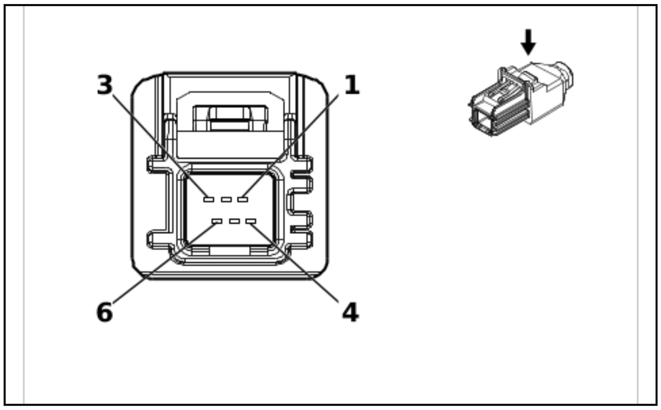
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P16 Instrument Panel Cluster Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Virtual Cockpit Unit Instrument Panel Display LVDS (Low Voltage Differential Signaling) Low Reference	I	—

P16 Instrument Panel Cluster Control Module X3



5907766

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551199
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(GY)

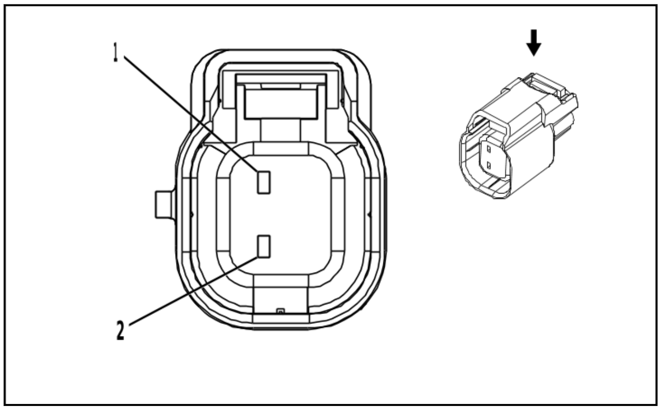
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P16 Instrument Panel Cluster Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	(Head Up Display) Head Up Display Signal	I	—

P19AG Radio Front Side Door Speaker - Left (UQ3)



4115616

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness
- OEM Connector: 34062-0046
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

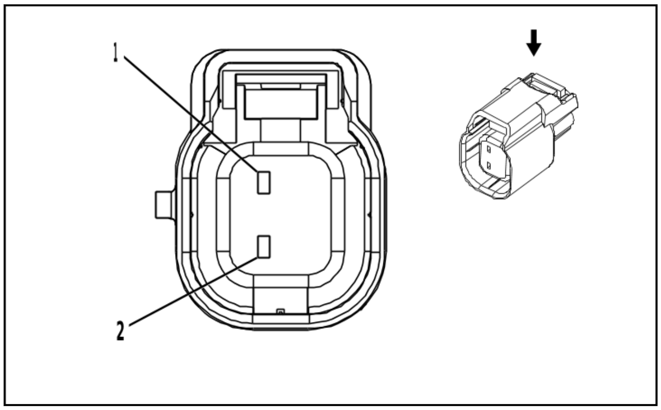
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AG Radio Front Side Door Speaker - Left (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BN / BU	(1) 118	(1) Left Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 1	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) I	(2) —

P19AH Radio Front Side Door Speaker - Right (UQ3)



4115616

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 34062-0046
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

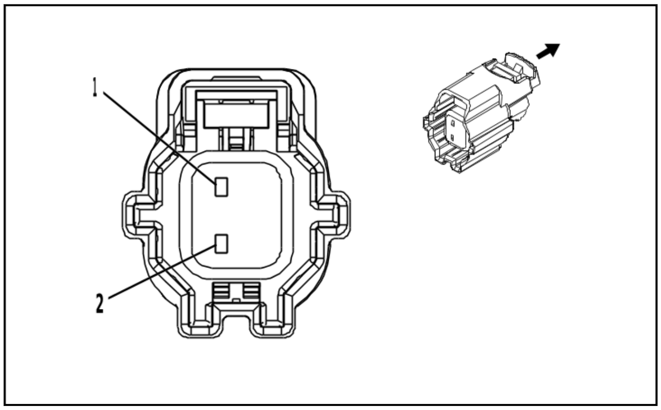
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AH Radio Front Side Door Speaker - Right (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) YE / BK	(1) 117	(1) Right Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 1	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —

P19AL Radio Rear Side Door Speaker - Left (UQ3)



4223204

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 13582917
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

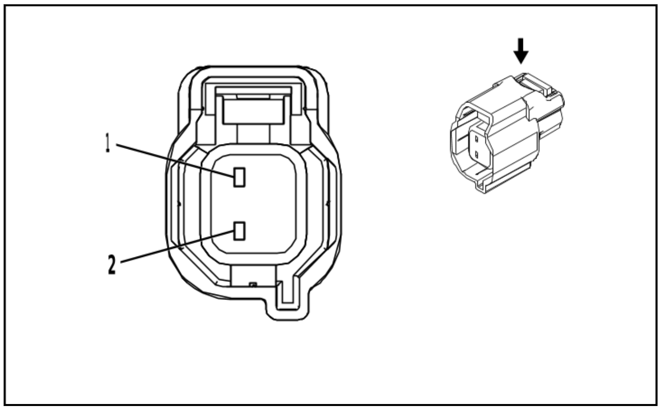
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19AL Radio Rear Side Door Speaker - Left (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BK	(1) 116	(1) Left Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 199	(2) Left Rear Speaker [+] Control	(2) I	(2) —

P19AL Radio Rear Side Door Speaker - Left (UQA)



2900396

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness
- OEM Connector: 13503509
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

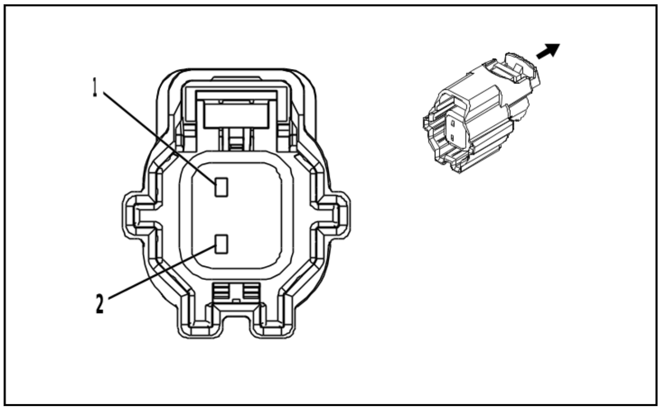
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19AL Radio Rear Side Door Speaker - Left (UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BK	(1) 116	(1) Left Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 199	(2) Left Rear Speaker [+] Control	(2) I	(2) —

P19AM Radio Rear Side Door Speaker - Right (UQ3)



4223204

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 13582917
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

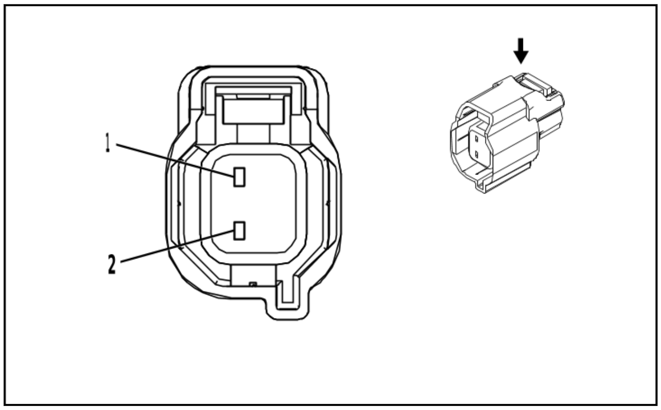
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19AM Radio Rear Side Door Speaker - Right (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / BK	(1) 115	(1) Right Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 46	(2) Right Rear Speaker [+] Control	(2) I	(2) —

P19AM Radio Rear Side Door Speaker - Right (UQA)



2900396

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 13503509
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

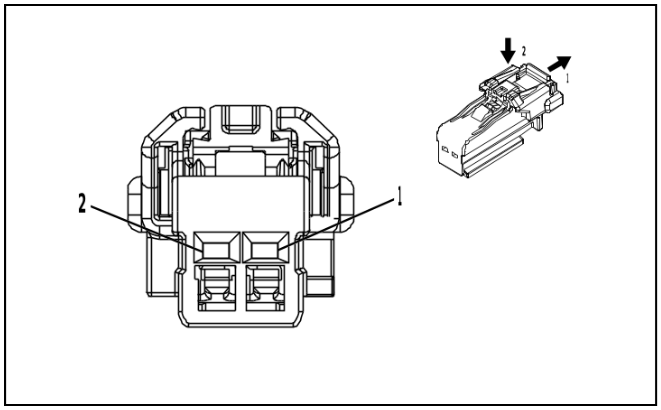
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19AM Radio Rear Side Door Speaker - Right (UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / BK	(1) 115	(1) Right Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 46	(2) Right Rear Speaker [+] Control	(2) I	(2) —

P19B Radio Front Center Speaker (UQA)



4373379

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

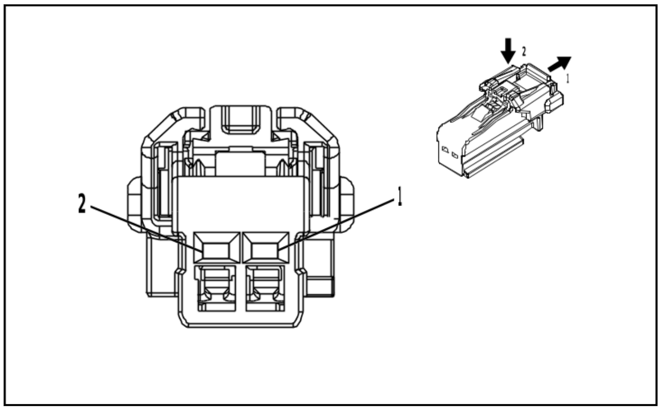
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19B Radio Front Center Speaker (UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 1960	(1) Front Center Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / WH	(2) 1860	(2) Front Center Speaker [+] Control	(2) I	(2) —

P19J Radio Front Speaker - Instrument Panel Left (UQA)



4373379

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

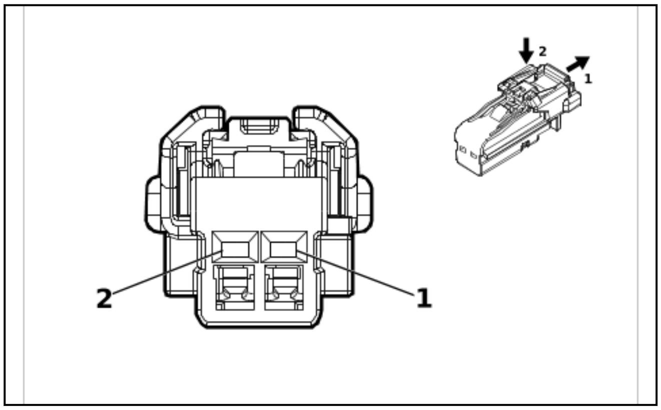
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19J Radio Front Speaker - Instrument Panel Left (UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / BN	(1) 1957	(1) Left Front Midrange Speaker [-] Control	(1) I	(1) UQA
(2) 2	(2) 0.5	(2) BU / VT	(2) 1857	(2) Left Front Midrange Speaker [+] Control	(2) I	(2) UQA

P19J Radio Front Speaker - Instrument Panel Left (UQ3)



4115691

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13532422
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

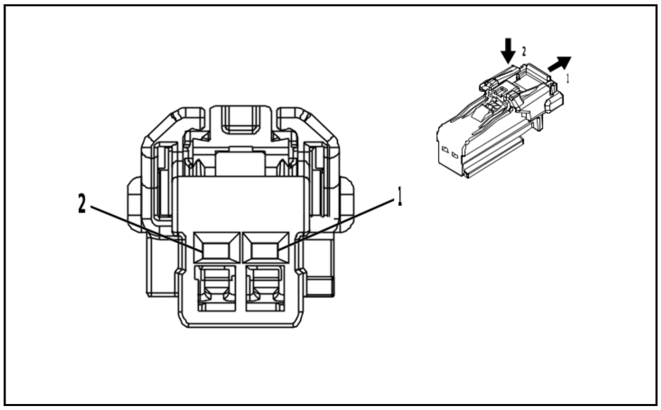
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19J Radio Front Speaker - Instrument Panel Left (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 118	(1) Left Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) I	(2) —

P19W Radio Front Speaker - Instrument Panel Right (UQA)



4373379

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

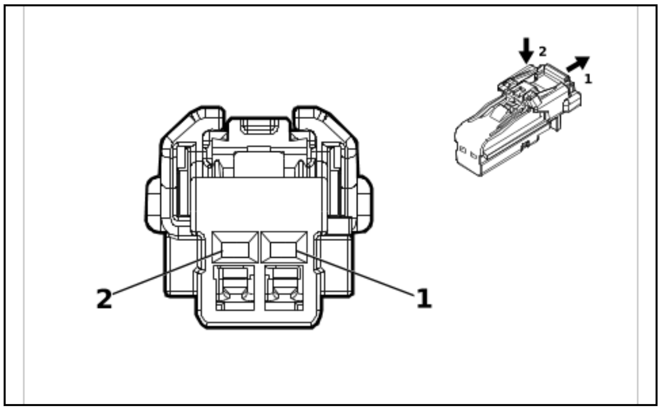
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19W Radio Front Speaker - Instrument Panel Right (UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BK	(1) 1953	(1) Right Front Midrange Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / YE	(2) 1853	(2) Right Front Midrange Speaker [+] Control	(2) I	(2) —

P19W Radio Front Speaker - Instrument Panel Right (UQ3)



4115691

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13532422
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

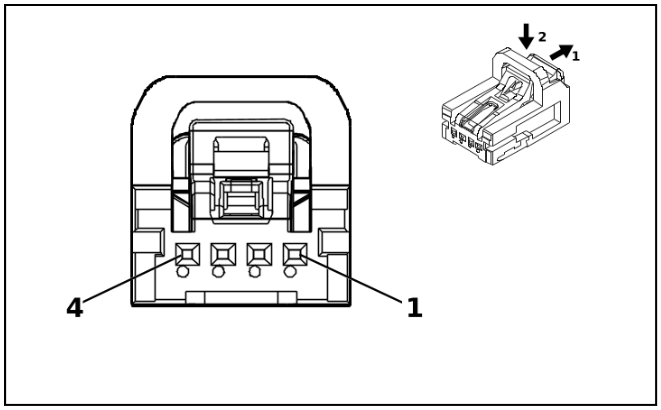
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P19W Radio Front Speaker - Instrument Panel Right (UQ3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BK	(1) 117	(1) Right Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —

P29 Head-Up Display X1 (UV6)



5200696

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068218
- Service Connector: 84769202
- Description: 4-Way F Mini 50 Series(BK)

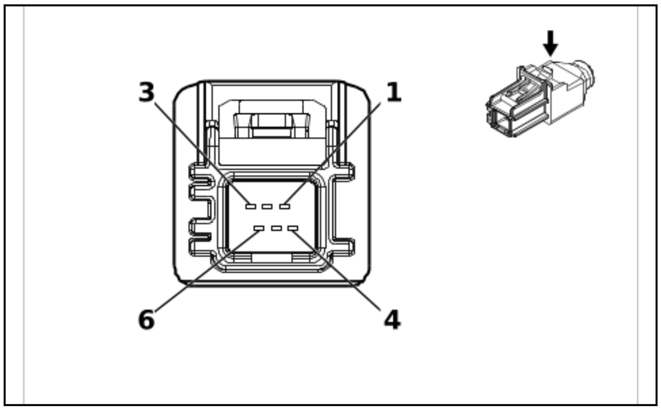
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

P29 Head-Up Display X1 (UV6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 1440	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK	(2) 2050	(2) Ground	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—

P29 Head-Up Display X2 (UV6)



6175927

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551200
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(GN)

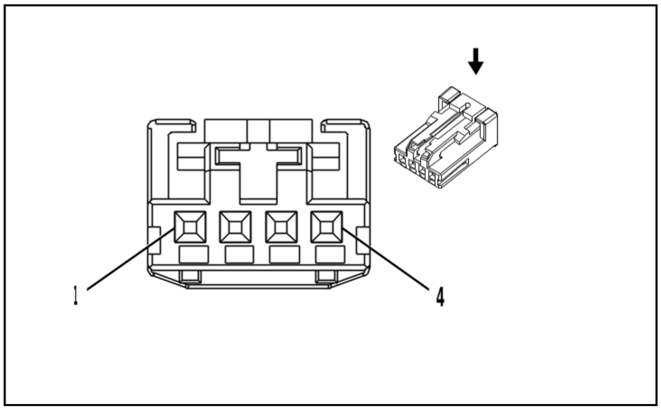
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P29 Head-Up Display X2 (UV6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	(Head Up Display) Head Up Display Signal	I	—

P43 Forward Collision Alert Display



2717162

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19352906
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

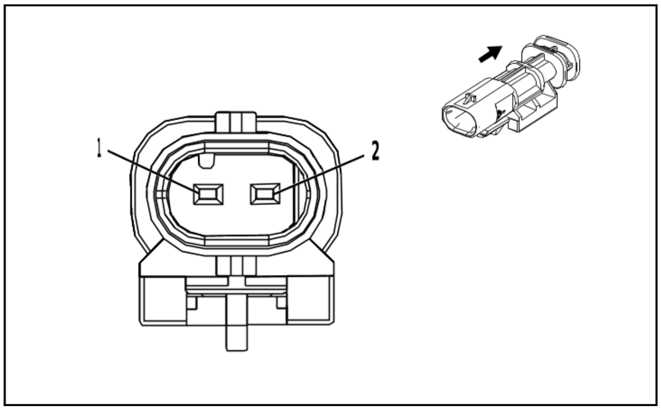
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

P43 Forward Collision Alert Display

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) VT / BK	(1) 1639	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0	(2) GY / YE	(2) 3885	(2) Forward Collision Alert LED Control	(2) I	(2) —
(3) 3	(3) 0	(3) GY / BK	(3) 4787	(3) Day Night LED Control	(3) I	(3) —
(4) 4	(4) 0	(4) BK / WH	(4) 2151	(4) Signal Ground	(4) I	(4) —

P45L Front Seat Lane Departure Warning Actuator - Left



2474755

Connector Part Information
- Harness Type: Seat Wiring Harness
- OEM Connector: 13591337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

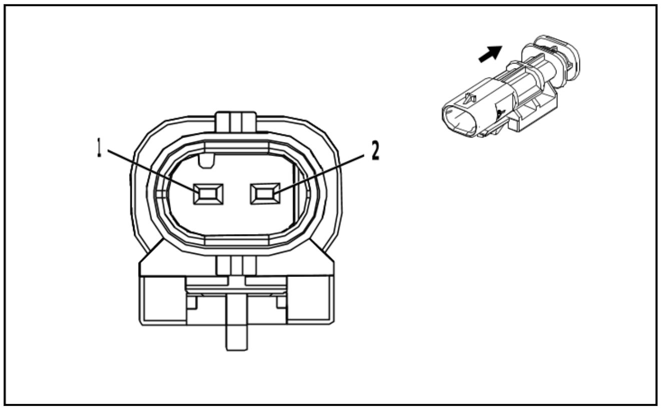
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P45L Front Seat Lane Departure Warning Actuator - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BK	(1) 3750	(1) Ground	(1) I	(1) —
(2) 2	(2) 0	(2) YE / BN	(2) 3037	(2) Driver Seat Left Rear Haptic Movement Motor Control	(2) I	(2) —

P45R Front Seat Lane Departure Warning Actuator - Right



2474755

Connector Part Information
- Harness Type: Seat Wiring Harness
- OEM Connector: 13591337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

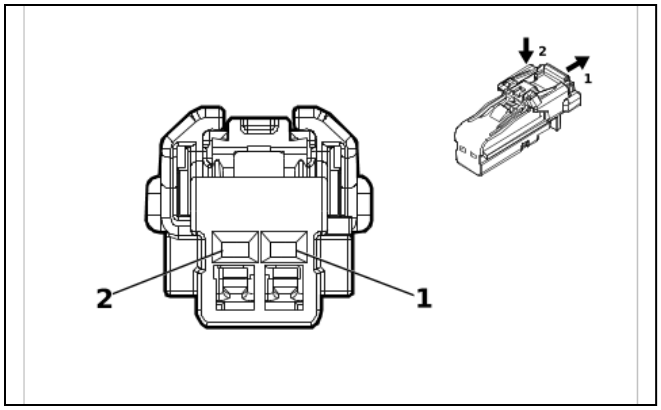
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P45R Front Seat Lane Departure Warning Actuator - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BK	(1) 3750	(1) Ground	(1) I	(1) —
(2) 2	(2) 0	(2) BN	(2) 3038	(2) Driver Seat Right Rear Haptic Movement Motor Control	(2) I	(2) —

P50 Regulatory Emergency Call Backup Speaker



4115691

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

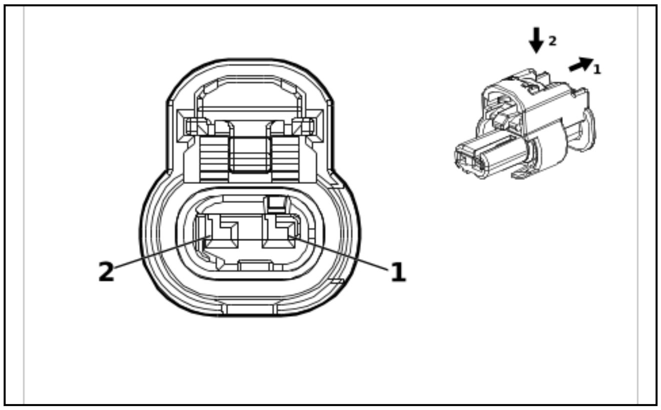
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P50 Regulatory Emergency Call Backup Speaker

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) WH / BK	(1) 4769	(1) Emergency Call Backup Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0	(2) GY / GN	(2) 4770	(2) Emergency Call Backup Speaker [+] Control	(2) I	(2) —

Q2 Air Conditioning Clutch



4649903

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

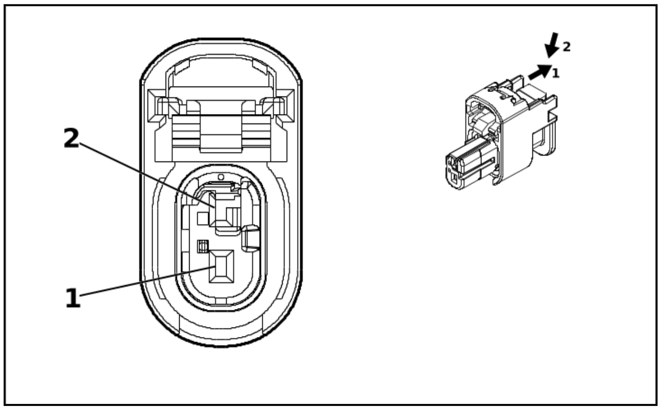
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q2 Air Conditioning Clutch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GN	(2) 59	(2) Air Conditioning Compressor Clutch Control	(2) I	(2) —

Q6E Camshaft Position Actuator Solenoid Valve - Exhaust



5340268

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296702-2
- Service Connector: 19371204
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

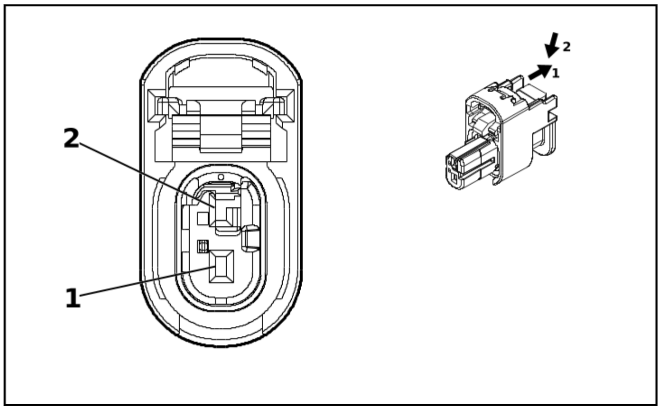
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q6E Camshaft Position Actuator Solenoid Valve - Exhaust

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5282	(1) Exhaust Camshaft Position Actuator Solenoid Valve 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6754	(2) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(2) I	(2) —

Q6F Camshaft Position Actuator Solenoid Valve - Intake



5340268

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296702-2
- Service Connector: 19371204
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

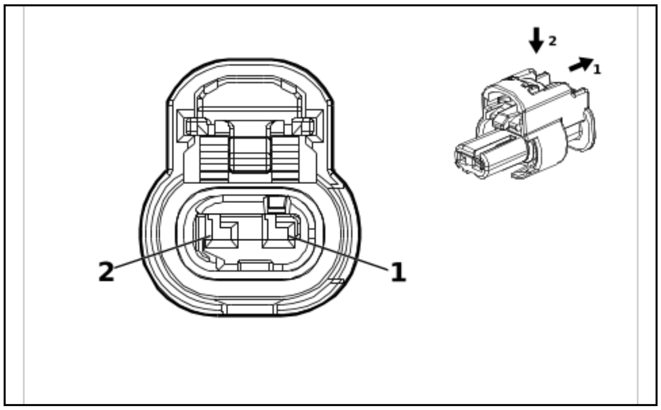
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q6F Camshaft Position Actuator Solenoid Valve - Intake

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BN	(1) 5284	(1) Intake Camshaft Position Actuator Solenoid Valve 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BN	(2) 6753	(2) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(2) I	(2) —

Q9F Differential Locking Actuator - Front (G93)



4649903

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

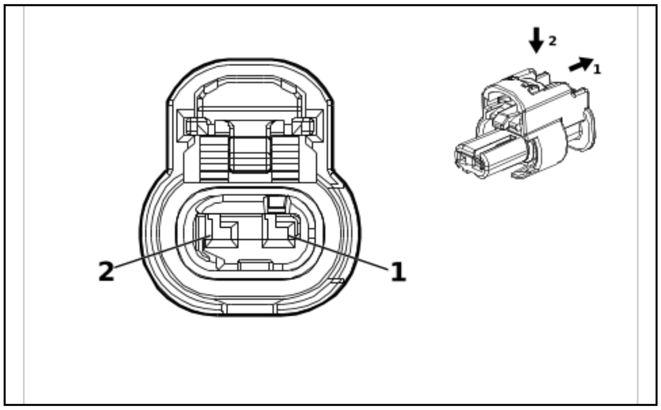
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q9F Differential Locking Actuator - Front (G93)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 7256	(1) Front Differential Lock Actuator Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) WH / BK	(2) 7254	(2) Front Differential Lock Actuator Low Control	(2) I	(2) —

Q9R Differential Locking Actuator - Rear



4649903

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

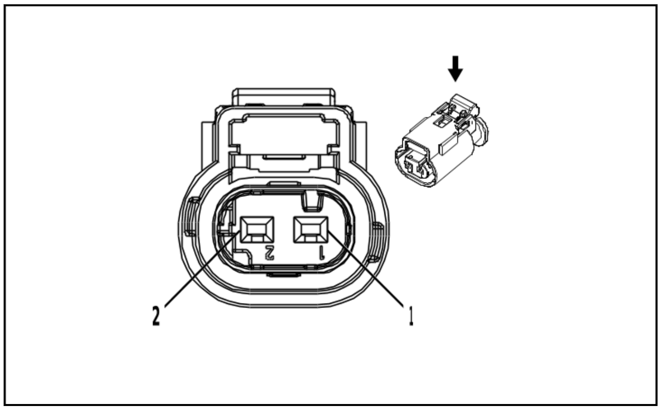
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q9R Differential Locking Actuator - Rear

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / BN	(1) 7258	(1) Rear Differential Lock Actuator Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / BK	(2) 7253	(2) Rear Differential Lock Actuator Low Control	(2) I	(2) —

Q12 Evaporative Emission Canister Purge Solenoid Valve



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

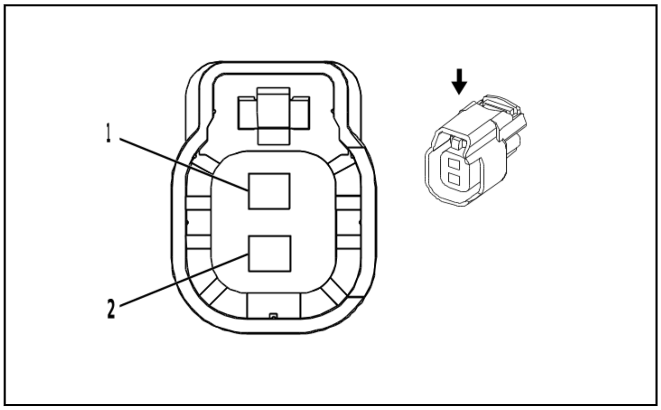
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q12 Evaporative Emission Canister Purge Solenoid Valve

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BU	(2) 428	(2) EVAP Canister Purge Solenoid Control	(2) I	(2) —

Q13 Evaporative Emission Canister Vent Solenoid Valve



2422378

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0028
- Service Connector: 13579002
- Description: 2-Way F 1.5 Series, Sealed(BK)

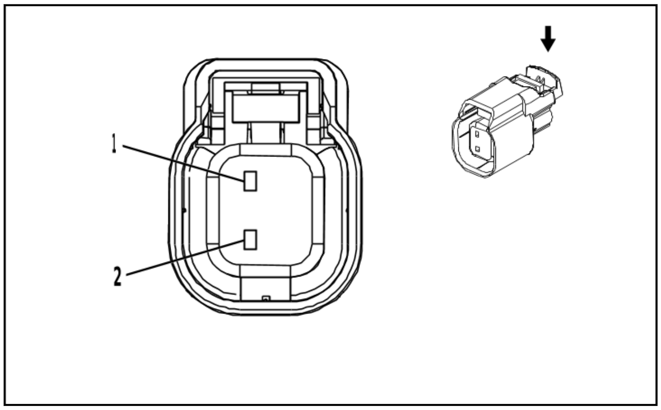
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q13 Evaporative Emission Canister Vent Solenoid Valve

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 1310	(1) EVAP Vent Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) RD / WH	(2) 4140	(2) Battery Positive Voltage	(2) I	(2) —

Q17A Fuel Injector 1



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34062-4008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

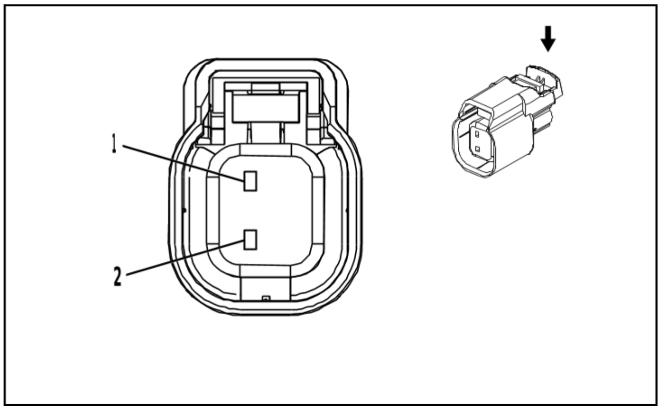
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q17A Fuel Injector 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.8	(1) BN	(1) 4801	(1) Direct Fuel Injector High Voltage Control Cylinder 1	(1) I	(1) —
(2) 2	(2) 0.8	(2) BN / WH	(2) 4901	(2) Direct Fuel Injector High Voltage Supply Cylinder 1	(2) I	(2) —

Q17B Fuel Injector 2



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34062-4008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

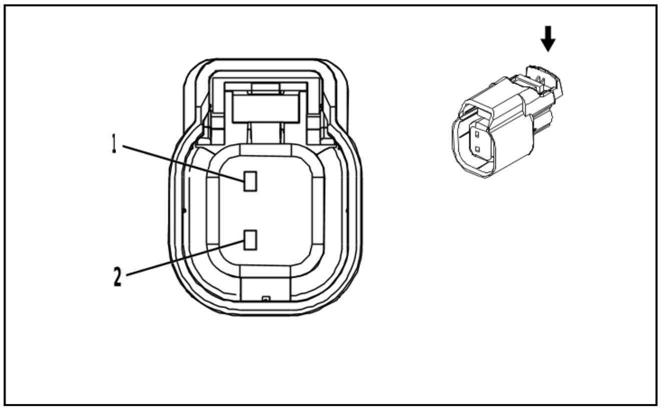
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q17B Fuel Injector 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.8	(1) BU	(1) 4802	(1) Direct Fuel Injector High Voltage Control Cylinder 2	(1) I	(1) —
(2) 2	(2) 0.8	(2) BU / GY	(2) 4902	(2) Direct Fuel Injector High Voltage Supply Cylinder 2	(2) I	(2) —

Q17C Fuel Injector 3



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34062-4008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

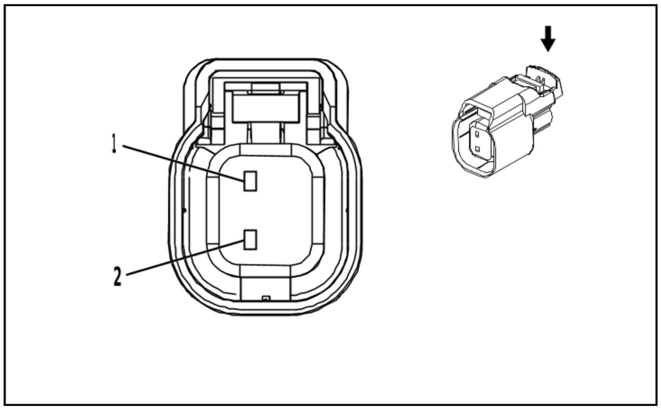
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q17C Fuel Injector 3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.8	(1) GN	(1) 4803	(1) Direct Fuel Injector High Voltage Control Cylinder 3	(1) I	(1) —
(2) 2	(2) 0.8	(2) GN / GY	(2) 4903	(2) Direct Fuel Injector High Voltage Supply Cylinder 3	(2) I	(2) —

Q17D Fuel Injector 4



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 34062-4008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

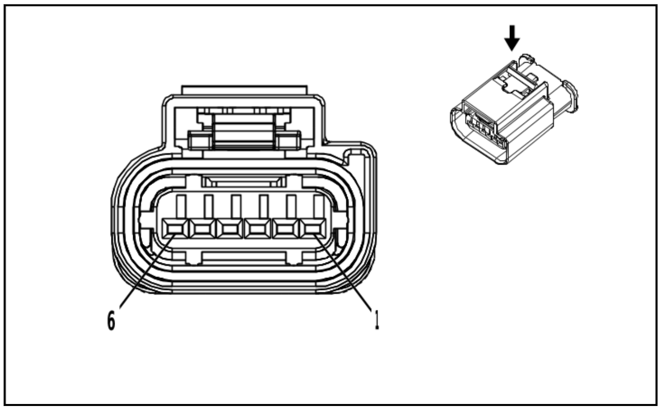
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q17D Fuel Injector 4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.8	(1) GY / BU	(1) 4804	(1) Direct Fuel Injector High Voltage Control Cylinder 4	(1) I	(1) —
(2) 2	(2) 0.8	(2) BU / WH	(2) 4904	(2) Direct Fuel Injector High Voltage Supply Cylinder 4	(2) I	(2) —

Q38 Throttle Body



3747579

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

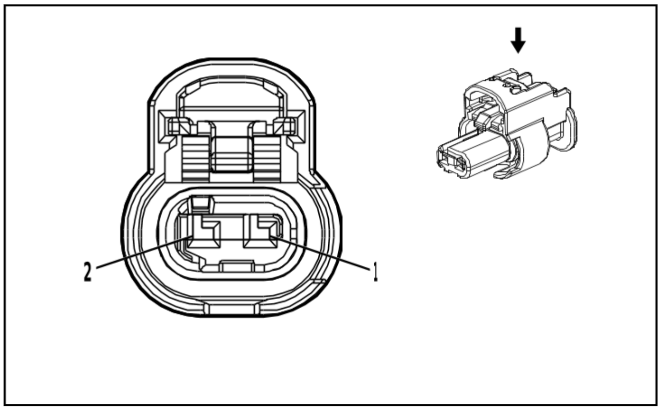
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q38 Throttle Body

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 581	(1) Throttle Actuator Open Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / WH	(2) 582	(2) Throttle Actuator Close Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 3630	(3) Throttle Position Sensor SENT 1 Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BN	(4) 2752	(4) Throttle Position Sensor Low Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) BN / RD	(5) 2701	(5) Throttle Position Sensor 5V Reference	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Q40 Turbocharger Bypass Valve Solenoid



4690744

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

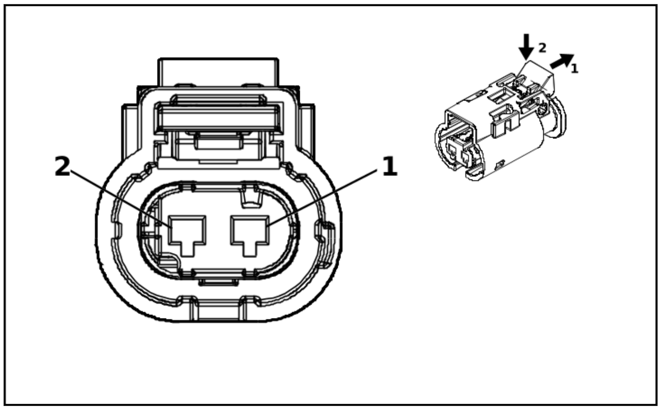
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q40 Turbocharger Bypass Valve Solenoid

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 3060	(2) Turbocharger Bypass Solenoid Valve Control Bank 1	(2) I	(2) —

Q44 Engine Oil Pressure Control Solenoid Valve



5245486

Connector Part Information
- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 10142540
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MLK Series, Sealed(BK)

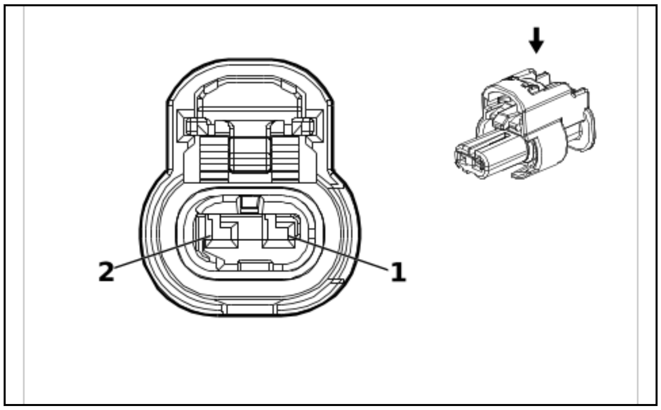
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

Q44 Engine Oil Pressure Control Solenoid Valve

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) Oil Pump Motor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) Engine Oil Pump Control	(2) I	(2) —

Q46 Air Conditioning Compressor Solenoid Valve



4335931

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

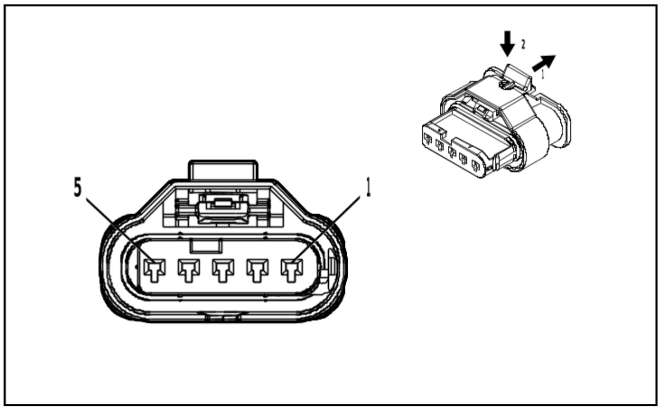
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q46 Air Conditioning Compressor Solenoid Valve

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 7574	(1) Air Conditioning Compressor Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) I	(2) —

Q74 Engine Coolant Bypass Valve



4994456

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(NA)

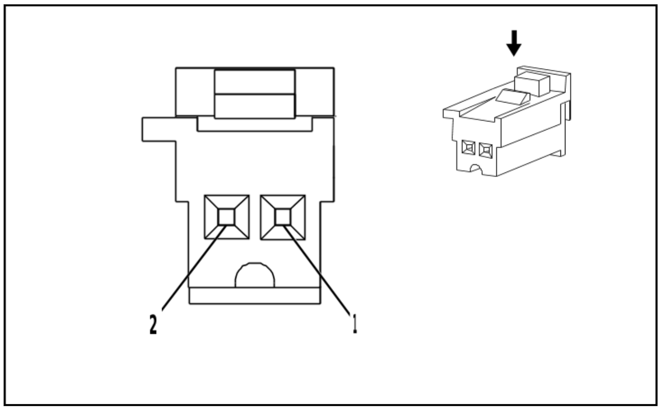
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q74 Engine Coolant Bypass Valve

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 2976	(1) Coolant Diverter Valve Actuator Control Open	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / BN	(2) 2977	(2) Coolant Diverter Valve Actuator Control Close	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / GY	(4) 2978	(4) Coolant Diverter Valve Position Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / GN	(5) 580	(5) Engine Control Sensors Low Reference 2	(5) I	(5) —

Q77A Transmission Control Solenoid Valve 1



4051391

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

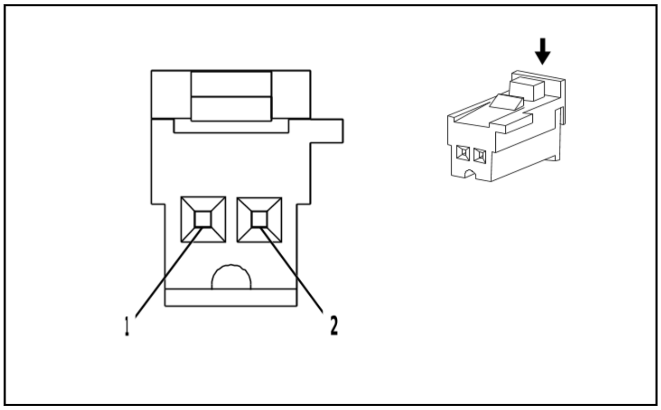
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77A Transmission Control Solenoid Valve 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6400	(1) Clutch Solenoid Valve A Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77B Transmission Control Solenoid Valve 2



4008644

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

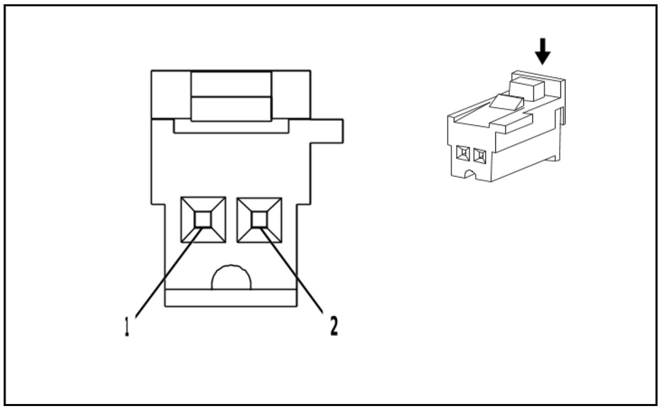
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77B Transmission Control Solenoid Valve 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 6401	(1) Clutch Solenoid Valve B Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77C Transmission Control Solenoid Valve 3



4008644

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

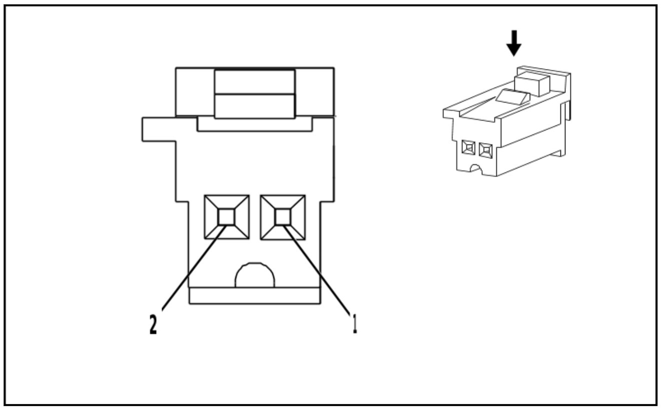
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77C Transmission Control Solenoid Valve 3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 6402	(1) Clutch Solenoid Valve C Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77D Transmission Control Solenoid Valve 4



4051391

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

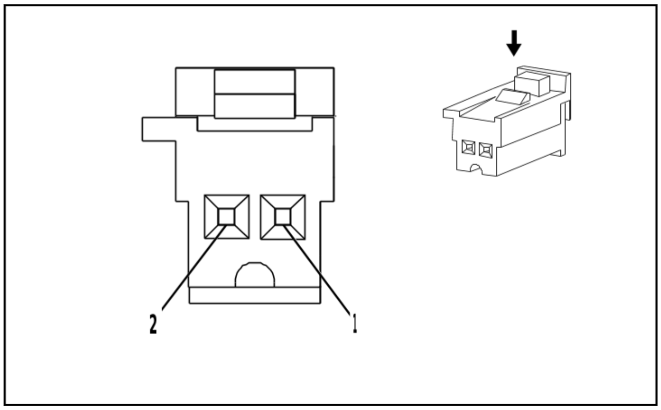
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77D Transmission Control Solenoid Valve 4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4508	(1) Transmission Clutch G Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 6387	(2) Transmission High Side Driver 1 Control	(2) I	(2) —

Q77E Transmission Control Solenoid Valve 5



4051391

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

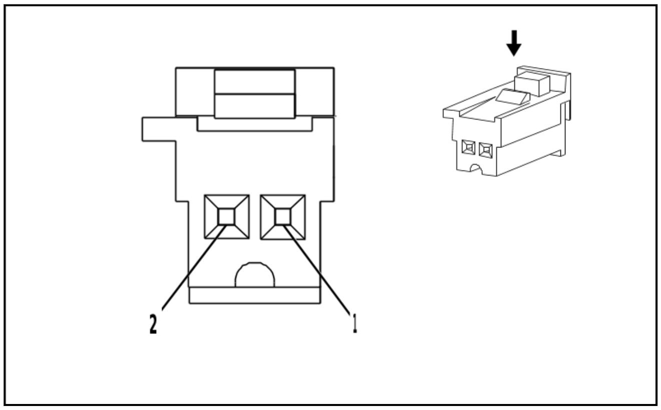
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

Q77E Transmission Control Solenoid Valve 5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) WH / BU	(1) 4507	(1) Transmission Clutch H Control	(1) I	(1) —
(2) 2	(2) 0	(2) GN / GY	(2) 6387	(2) Transmission High Side Driver 1 Control	(2) I	(2) —

Q77F Transmission Control Solenoid Valve 6



4051391

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

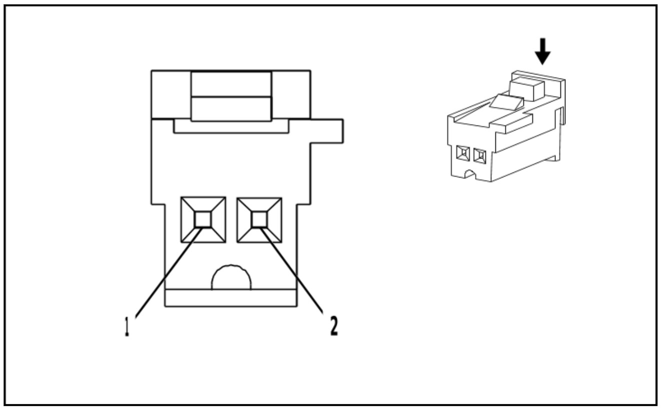
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77F Transmission Control Solenoid Valve 6

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4507	(1) Transmission Clutch H Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 6387	(2) Transmission High Side Driver 1 Control	(2) I	(2) —

Q77G Transmission Control Solenoid Valve 7



4008644

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

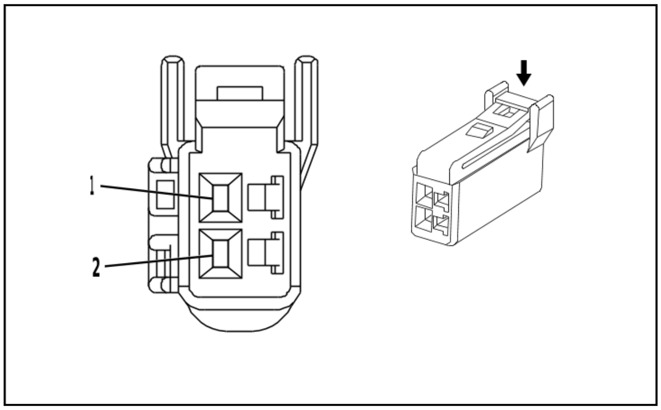
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77G Transmission Control Solenoid Valve 7

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 6404	(1) Clutch Solenoid Valve E Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77H Transmission Control Solenoid Valve 8



4051682

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 7287-0122
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 040 III Series(NA)

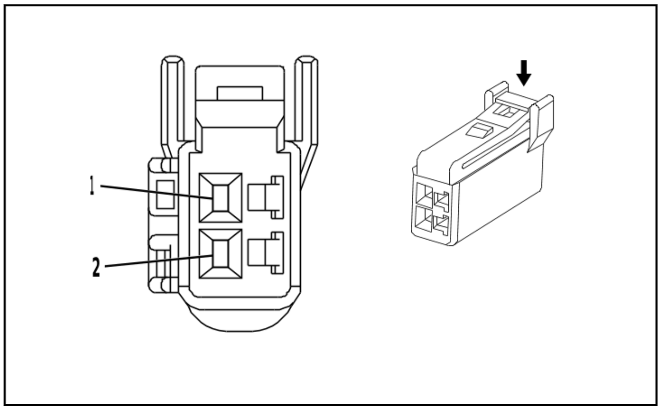
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q77H Transmission Control Solenoid Valve 8

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 6387	(1) Transmission High Side Driver 1 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 6380	(2) Torque Converter Clutch Enable Solenoid Valve A Control	(2) I	(2) —

Q77J Transmission Control Solenoid Valve 9



4051682

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 7287-0122
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 040 III Series(NA)

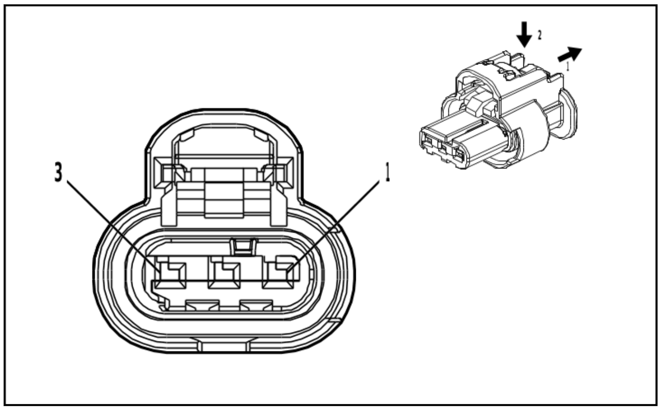
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q77J Transmission Control Solenoid Valve 9

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 6210	(2) Torque Converter Clutch Enable Solenoid Valve B Control	(2) I	(2) —

Q97B Engine Coolant Flow Control Valve - Block



4778903

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

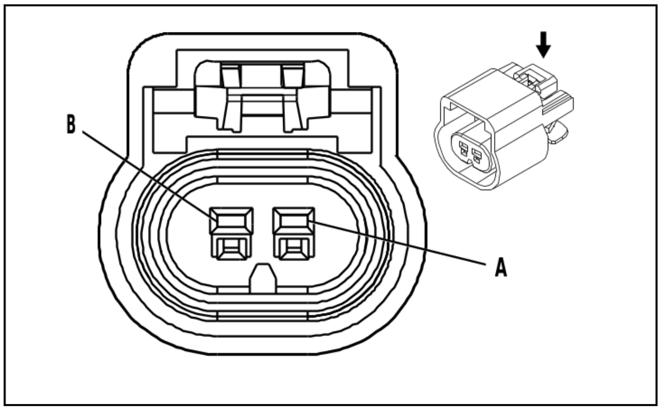
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q97B Engine Coolant Flow Control Valve - Block

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BN	(1) 2732	(1) Engine Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 550	(2) Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BU	(3) 5294	(3) Powertrain Main Relay Fused Supply Voltage 5	(3) I	(3) —

R6A Terminating Resistor - High Speed Bus



523630

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13510085
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 150 GT Series, Sealed(BK)

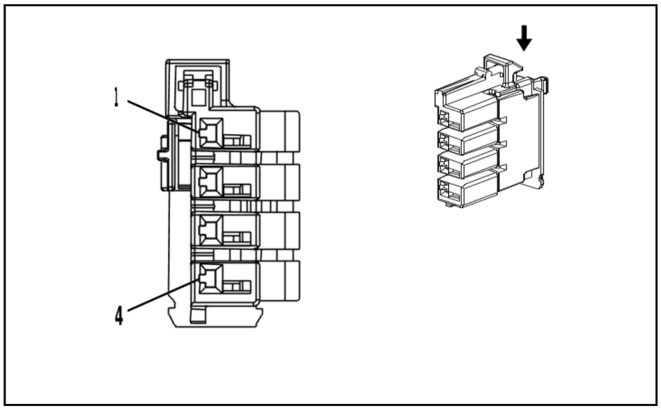
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

R6A Terminating Resistor - High Speed Bus

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	0.5	BU / VT	4101	AUTOSAR CAN Bus [+] 4 Serial Data	I	—
B	0.5	WH	4100	AUTOSAR CAN Bus [-] 4 Serial Data	I	—

S2 Automatic Transmission Manual Shift Shaft Position Switch



4364148

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2289524-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON Series(BN)

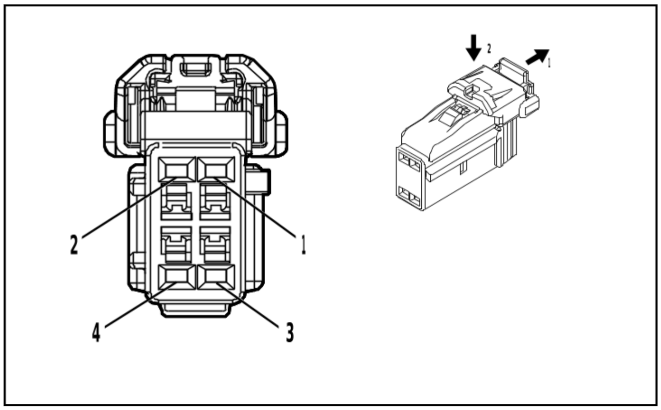
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

S2 Automatic Transmission Manual Shift Shaft Position Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 3337	(1) Transmission Internal Mode Switch Mode Control Y	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / RD	(2) 596	(2) 5V Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 3927	(3) Transmission Internal Mode Switch Feedback Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / WH	(4) 3338	(4) Transmission Internal Mode Switch Mode Control X	(4) I	(4) —

S3 Automatic Transmission Control



4872683

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: 19369633
- Description: 4-Way F 1.2 Series(BK)

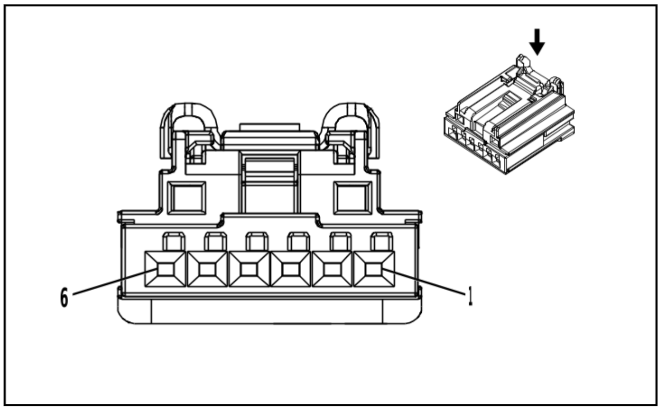
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

S3 Automatic Transmission Control

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / BK	(1) 7553	(1) Park Lock Solenoid Actuator Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / VT	(2) 5905	(2) Key Capture/Column Lock Shift Position Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / BU	(3) 3738	(3) Tap Up/Tap Down Switch Signal 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 2050	(4) Ground	(4) I	(4) —

S13D Door Lock Switch - Driver



4145138

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

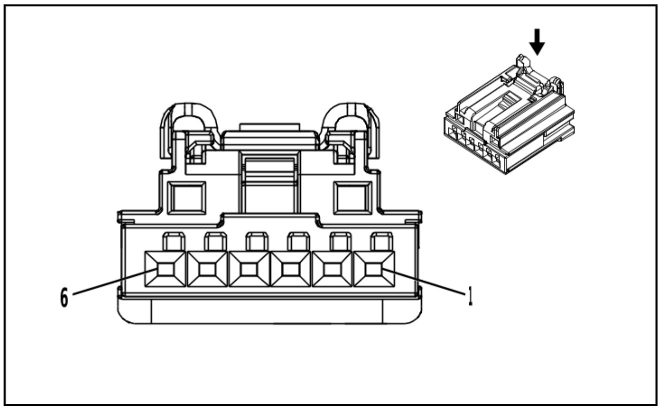
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13D Door Lock Switch - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / YE	(2) 4244	(2) Left Front Door Lock Indicator Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / YE	(3) 2771	(3) Left Front Door Lock Switch Lock Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BN / WH	(4) 2772	(4) Left Front Door Lock Switch Unlock Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK	(5) 1150	(5) Ground	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S13P Door Lock Switch - Passenger



4145138

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

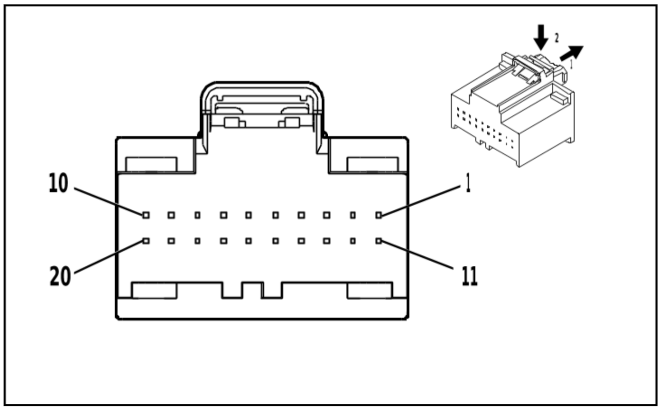
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13P Door Lock Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / VT	(1) 4638	(1) LED Backlight Dimming Control Right Front Door	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / BU	(2) 4245	(2) Right Front Door Lock Indicator Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) YE / VT	(3) 2773	(3) Right Front Door Lock Switch Lock Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BN / VT	(4) 2774	(4) Right Front Door Lock Switch Unlock Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK	(5) 3450	(5) Ground	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S26 Hazard Warning Switch



5109511

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 31410-0208
- Service Connector: 13525993
- Description: 20-Way F 0.64 Series(GN)

Terminal Part Information

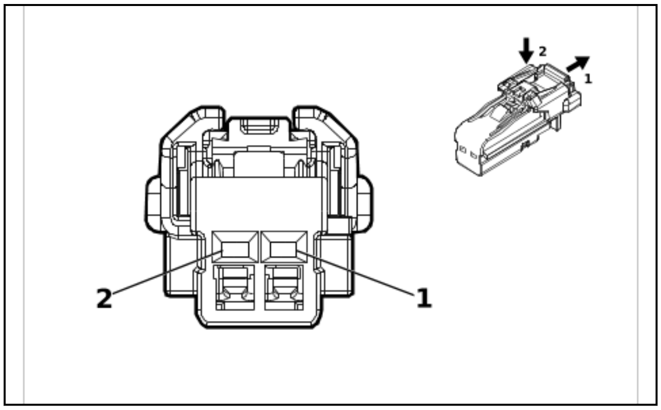
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13584547	J-35616-64B (L-BU)	J-38125-215A

S26 Hazard Warning Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 2151	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 111	(3) Hazard Warning Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH	(4) 6816	(4) Indicator Dimming Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) GN	(5) 1110	(5) Stop/Start Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BU	(6) 1111	(6) Stop/Start Switch Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 3152	(7) Lane Departure Warning Indicator Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) GY / WH	(8) 3153	(8) Lane Departure Warning Disable Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BU / YE	(9) 7176	(9) All Windows Open Switch Signal	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) YE / GN	(11) 7122	(11) Axle Differential Lock Switch Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) YE	(12) 7115	(12) Rear Axle Differential Lock Indicator Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) VT / GY	(13) 7117	(13) Front Axle Differential Lock Indicator Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) BU / WH	(15) 3119	(15) Roof Rail Air Bag Disable Switch Signal	(15) I	(15) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(16) 16	(16) 0.35	(16) BN / WH	(16) 3895	(16) Roof Rail Air Bag Disable Switch Low Reference	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) BU / WH	(18) 10716	(18) Upfitter Accessory Relay 1 Coil Control	(18) I	(18) —
(19) 19	(19) 0.35	(19) GY	(19) 4989	(19) Driver Mode 2 Switch Signal	(19) I	(19) —
20	—	—	—	Not Occupied	—	—

S33 Steering Wheel Horn Contact



4115691

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13532422
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

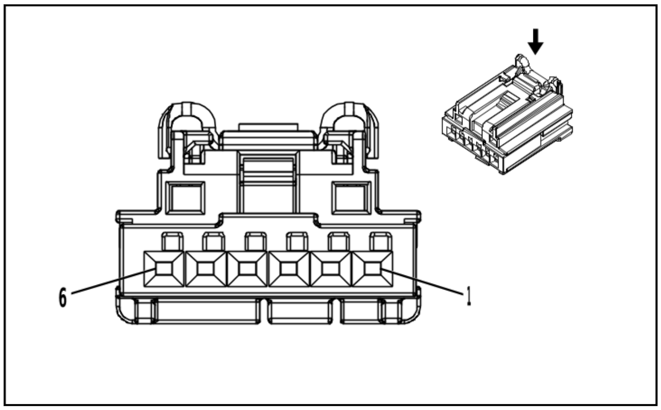
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S33 Steering Wheel Horn Contact

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —

S36 Dimmer Switch



3960313

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series(BK)

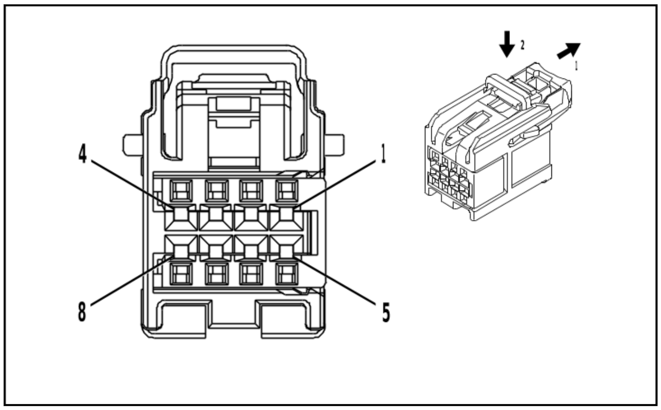
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S36 Dimmer Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / YE	(1) 5005	(1) Instrument Panel Lamp Dimmer Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / GY	(2) 44	(2) Instrument Panel Lamp Dimmer Switch Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BK	(4) 2050	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE	(5) 6817	(5) LED Backlight Dimming Control 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S38 On/Off Vehicle Switch



4232228

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series(GY)

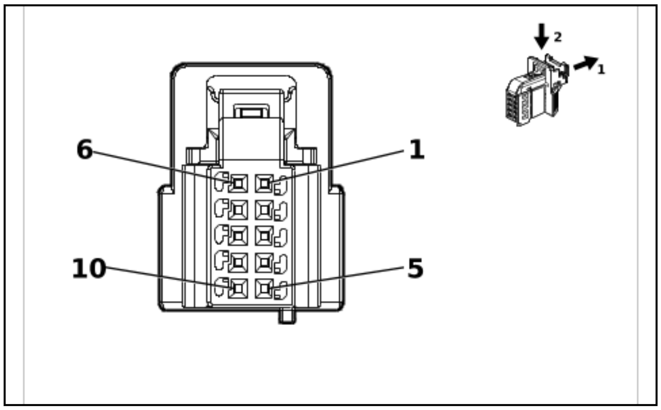
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S38 On/Off Vehicle Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BK	(1) 5719	(1) Ignition Mode Switch Start LED Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / BK	(2) 5720	(2) Ignition Mode Switch Accessory LED Signal	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK / WH	(3) 2151	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / GN	(4) 5723	(4) Ignition Mode Switch Mode Voltage	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE	(5) 6817	(5) LED Backlight Dimming Control 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BK / GY	(7) 3559	(7) Passive Start Switch 2 Low Reference	(7) I	(7) —
(8) 8	(8) 0.35	(8) GN / BK	(8) 3558	(8) Passive Start Switch Signal 2	(8) I	(8) —

S47D Front Seat Adjuster Memory Switch - Driver (A45)



5838155

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness
- OEM Connector: 2310000-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 MQS Series(BK)

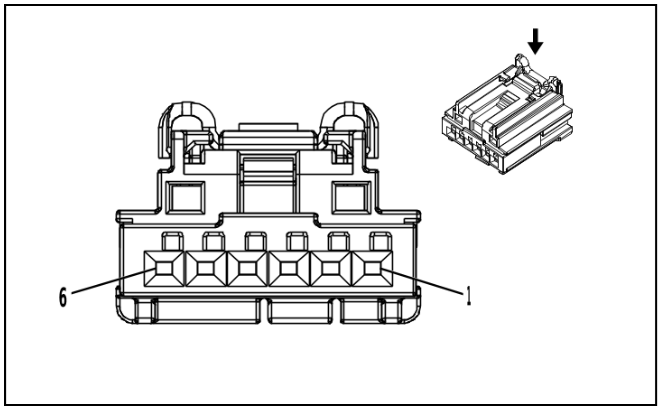
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S47D Front Seat Adjuster Memory Switch - Driver (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / YE	(2) 4244	(2) Left Front Door Lock Indicator Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / YE	(3) 2771	(3) Left Front Door Lock Switch Lock Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BN / WH	(4) 2772	(4) Left Front Door Lock Switch Unlock Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 3051	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) BU / GN	(6) 614	(6) Seat Memory Switch Set Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 615	(7) Seat Memory Switch Signal 1	(7) I	(7) —
8 - 10	—	—	—	Not Occupied	—	—

S51 Communication Center Call Switch



3960313

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series(BK)

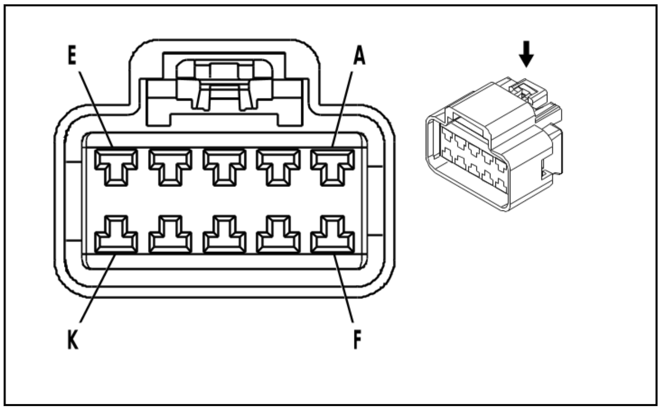
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S51 Communication Center Call Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / BK	(1) 2515	(1) Telematics Switch Supply Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GN / WH	(3) 2514	(3) Telematics Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE / VT	(4) 2516	(4) Telematics Switch Green LED Indicator Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) BN / WH	(5) 2517	(5) Telematics Switch Red LED Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BK / WH	(6) 451	(6) Signal Ground	(6) I	(6) —

S64D Front Seat Adjuster Switch - Driver (A2X)



623046

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series(BK)

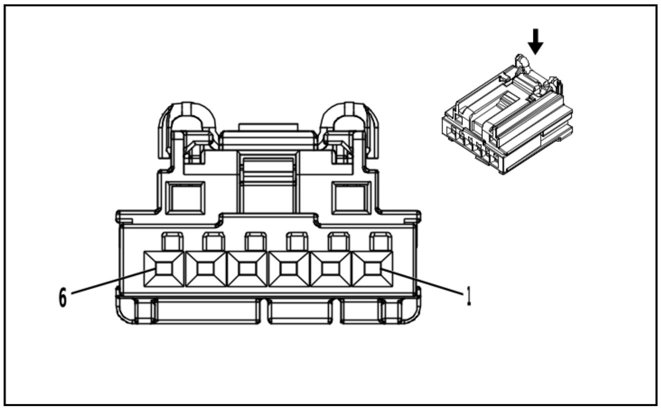
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S64D Front Seat Adjuster Switch - Driver (A2X)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	RD / GY	3540	Battery Positive Voltage	I	—
B	1.5	BU / YE	277	Driver Seat Recline Motor Rearward Control	I	—
C	1.5	YE / BU	285	Driver Seat Horizontal Motor Forward Control	I	—
D	1.5	GY / GN	284	Driver Seat Horizontal Motor Rearward Control	I	—
E	1.5	GY / BU	283	Driver Seat Rear Vertical Motor Down Control	I	—
F	1.5	GN / BN	286	Driver Seat Front Vertical Motor Up Control	I	—
G	1.5	YE	282	Driver Seat Rear Vertical Motor Up Control	I	—
H	1.5	GN / YE	276	Driver Seat Recline Motor Forward Control	I	—
J	2.5	BK	3750	Ground	I	—
K	1.5	BU / VT	287	Driver Seat Front Vertical Motor Down Control	I	—

S64D Front Seat Adjuster Switch - Driver (A45)



3960313

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

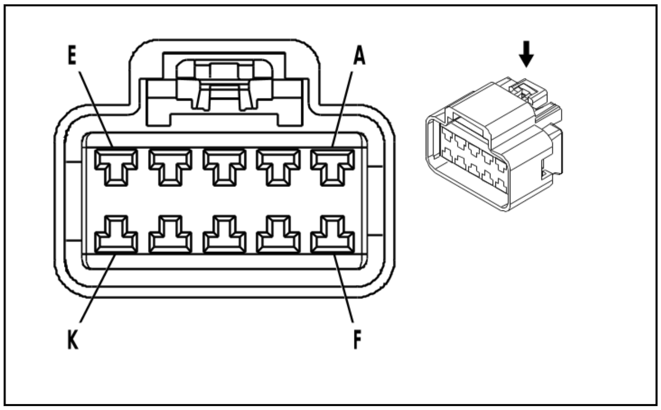
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S64D Front Seat Adjuster Switch - Driver (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 3340	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GN / GY	(3) 3758	(3) Driver Seat Adjuster Memory Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 3750	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S64P Front Seat Adjuster Switch - Passenger



623046

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series(BK)

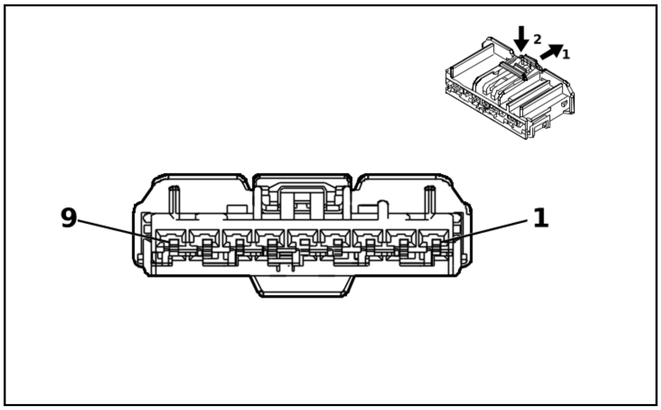
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S64P Front Seat Adjuster Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	—	—	—	Not Occupied	—	—
B	0	YE / BU	290	Passenger Seat Horizontal Motor Rearward Control	I	—
C	0	YE / WH	296	Passenger Seat Horizontal Motor Forward Control	I	—
D	0	BU / BN	77	Passenger Seat Recline Motor Rearward Control	I	—
E	0	BK	4250	Ground	I	—
F	0	BU / WH	289	Passenger Seat Rear Vertical Motor Down Control	I	—
G	0	RD / YE	4340	Battery Positive Voltage	I	—
H	0	GN	76	Passenger Seat Recline Motor Forward Control	I	—
J	—	—	—	Not Occupied	—	—
K	0	GN / WH	288	Passenger Seat Rear Vertical Motor Up Control	I	—

S65D Front Seat Lumbar Switch - Driver (AL9)



5204289

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series(GY)

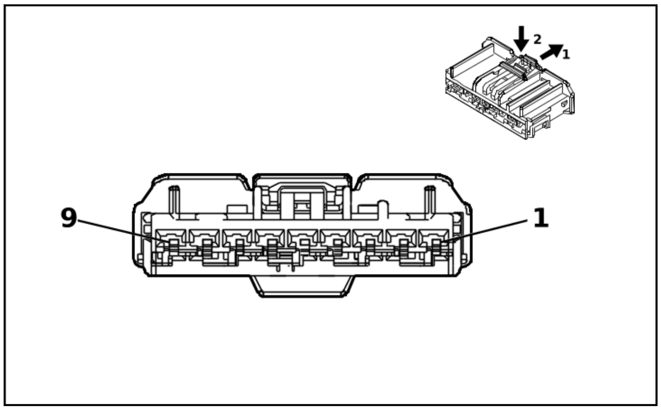
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S65D Front Seat Lumbar Switch - Driver (AL9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 3750	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) RD / WH	(3) 3440	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.75	(5) BU	(5) 611	(5) Driver Seat Lumbar Support Motor Forward Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) VT	(7) 610	(7) Driver Seat Lumbar Support Motor Backward Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—

S65P Front Seat Lumbar Switch - Passenger



5204289

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series(GY)

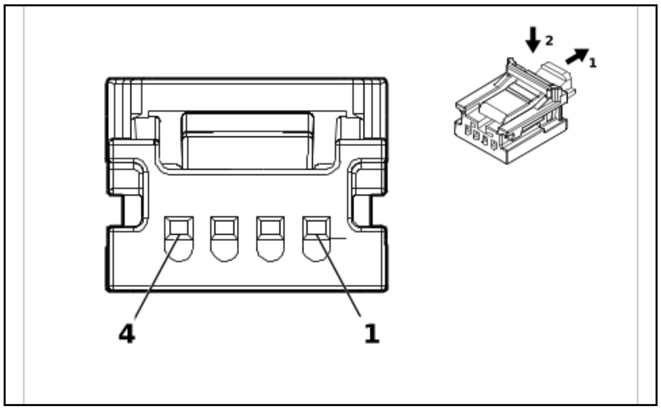
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S65P Front Seat Lumbar Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BK	(1) 4250	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) RD / BN	(3) 4240	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0	(5) BU	(5) 211	(5) Passenger Seat Lumbar Support Motor Forward Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0	(7) VT	(7) 210	(7) Passenger Seat Lumbar Support Motor Backward Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—

S70E Radio Favorites Switch - Steering Wheel



5493278

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13507113
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series(BK)

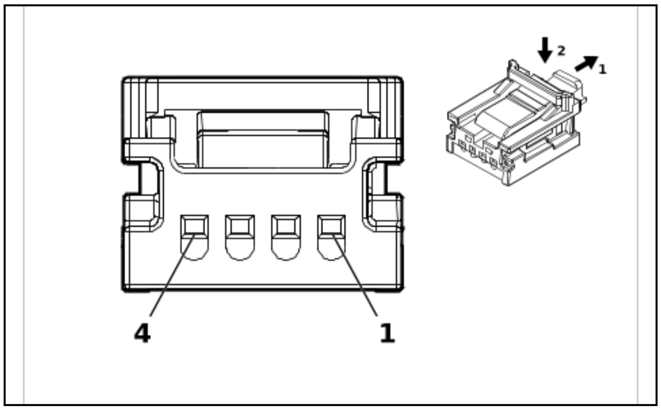
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S70E Radio Favorites Switch - Steering Wheel

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / YE	(2) 4313	(2) Radio Favorite Forward Switch Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) YE / BU	(3) 4312	(3) Radio Favorite Back Switch Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S70F Radio Volume Switch - Steering Wheel



5493584

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13507115
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series(GY)

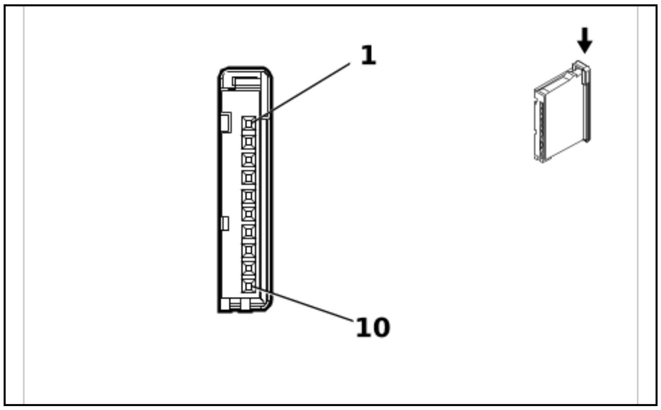
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S70F Radio Volume Switch - Steering Wheel

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 4314	(2) Radio Volume Down Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 4315	(3) Radio Volume Up Switch Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S70L Cruise Control Switch



6496613

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13540043
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.5 MQS Series(BK)

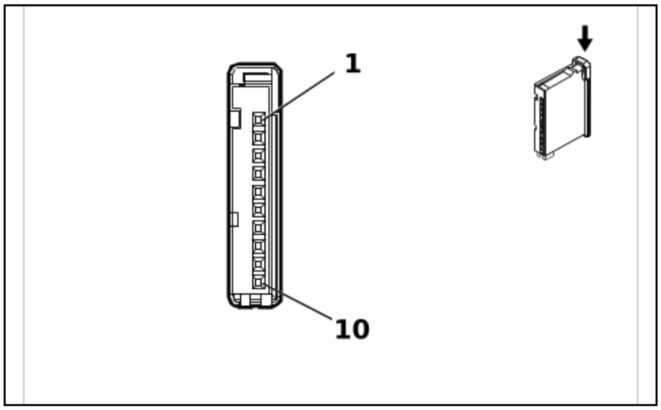
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
I	Not required	No Tool Required	No Tool Required

S70L Cruise Control Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GY / GN	(3) 5737	(3) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) YE / BK	(5) 3893	(5) Steering Wheel LED Backlight Dimming Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BN / GN	(7) 1884	(7) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BK / VT	(8) 1449	(8) Steering Wheel Resistor Ladder Low Reference	(8) I	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0	(10) BK / WH	(10) 6051	(10) Steering Wheel Ground	(10) I	(10) —

S70R Radio Control Switch - Steering Wheel



6496614

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13540044
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.5 MQS Series(NA)

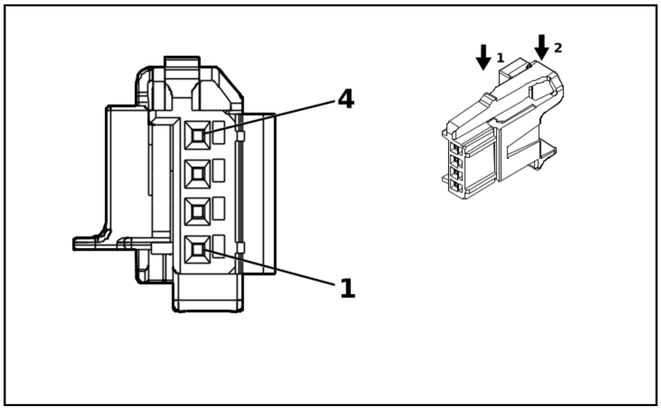
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S70R Radio Control Switch - Steering Wheel

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / GN	(1) 40	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY / BN	(2) 4314	(2) Radio Volume Down Switch Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) WH / YE	(3) 4313	(3) Radio Favorite Forward Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GN / BK	(4) 10652	(4) Radio LIN Bus 1	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE / BK	(5) 3893	(5) Steering Wheel LED Backlight Dimming Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE / GY	(6) 5883	(6) Steering Wheel Heating Switch Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) BN / WH	(7) 5884	(7) Steering Wheel Heating Switch LED Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) BK / WH	(8) 6051	(8) Steering Wheel Ground	(8) I	(8) —
(9) 9	(9) 0.35	(9) BU	(9) 4315	(9) Radio Volume Up Switch Signal	(9) I	(9) —
(10) 10	(10) 0.35	(10) BK / WH	(10) 6051	(10) Steering Wheel Ground	(10) I	(10) —

S72 Sunroof Switch (CAC)



5191926

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 2294399-1
- Service Connector: 84724190
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

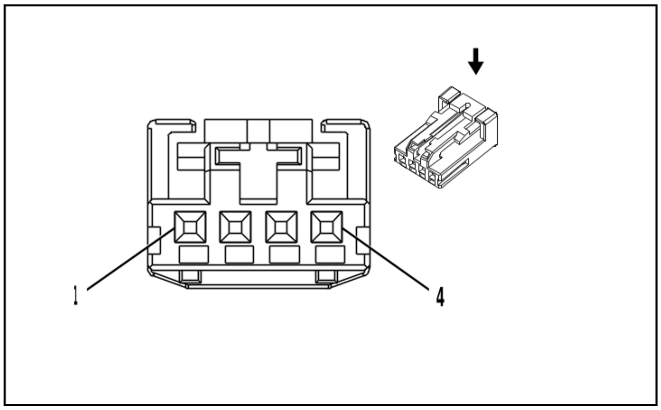
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S72 Sunroof Switch (CAC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 4250	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BU / VT	(4) 5027	(4) Sunroof Switch Serial Data 1 Signal	(4) I	(4) —

S76 Trailer Brake Control Switch



2717162

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

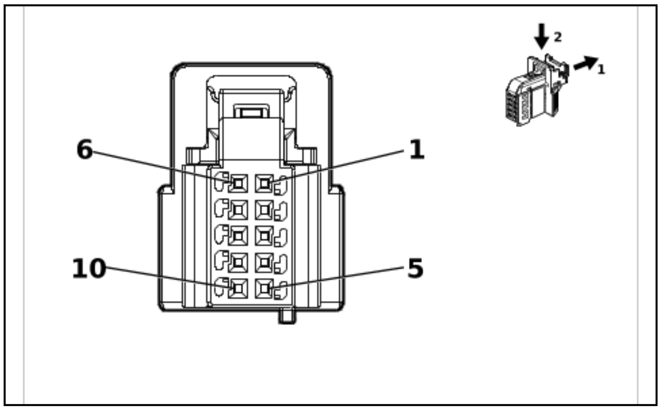
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S76 Trailer Brake Control Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) RD / VT	(1) 4040	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0	(2) GN / BU	(2) 2733	(2) Brake System Control Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S78 Turn Signal Switch



5838155

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2310000-1
- Service Connector: 13518417
- Description: 10-Way F 0.64 MQS Series(BK)

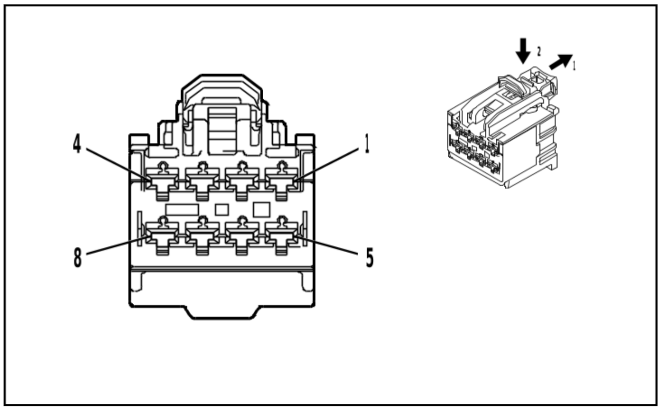
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A

S78 Turn Signal Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / GN	(1) 2915	(1) Left Turn Signal Switch Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / BU	(2) 2916	(2) Right Turn Signal Switch Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) WH / BK	(5) 94	(5) Windshield Washer Switch Signal	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE / BN	(6) 307	(6) Headlamp Switch Flash Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 524	(7) High Beam Select Switch High Beam Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BK / GY	(8) 6009	(8) Windshield Wiper Switch Low Reference	(8) I	(8) —
(9) 9	(9) 0.35	(9) GY	(9) 1715	(9) Windshield Wiper Switch High Signal	(9) I	(9) —
(10) 10	(10) 0.35	(10) YE / BU	(10) 1714	(10) Windshield Wiper Switch Low Signal	(10) I	(10) —

S79D Front Side Door Window Control Switch - Driver X1



4875738

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 33223792
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 2.8 OCS Series(BK)

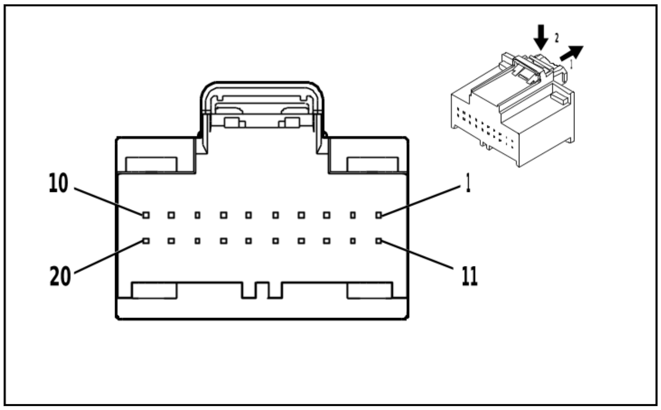
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S79D Front Side Door Window Control Switch - Driver X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 1150	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / BN	(2) 2764	(2) Window Switch Left Front Down Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) WH	(5) 606	(5) Left Outside Rearview Mirror Heater Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) GY / GN	(7) 2763	(7) Window Switch Left Front Up Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) RD / VT	(8) 1940	(8) Battery Positive Voltage	(8) I	(8) —

S79D Front Side Door Window Control Switch - Driver X2



5109537

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 31410-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 0.64 Series(GY)

Terminal Part Information

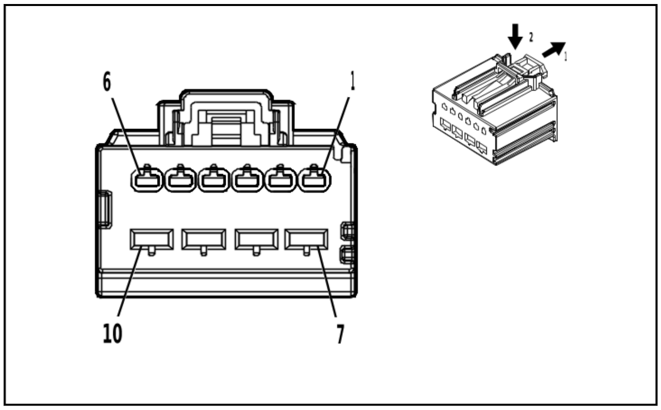
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S79D Front Side Door Window Control Switch - Driver X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / YE	(1) 2771	(1) Left Front Door Lock Switch Lock Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / WH	(2) 2772	(2) Left Front Door Lock Switch Unlock Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) VT / YE	(4) 4244	(4) Left Front Door Lock Indicator Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) BN / GY	(5) 4784	(5) Left Front Door LED Backlight Dimming Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) GY / YE	(6) 1760	(6) Left Side Object Detection LED Control	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) YE / BN	(8) 2789	(8) Left Front Mirror Motor Common Control	(8) I	(8) —
(9) 9	(9) 0.35	(9) GN	(9) 2766	(9) Power Window Switch Left Front Express Signal	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) WH / VT	(11) 4258	(11) Left Front Door Lock Status Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) VT / BU	(12) 2788	(12) Left Front Mirror Motor Up [+] Down [-] Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) BN / BK	(13) 2790	(13) Left Front Mirror Motor Right [+] Left [-] Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(15) 15	(15) 0.35	(15) GN / YE	(15) 6134	(15) Body Control Module LIN Bus 3	(15) I	(15) —
(16) 16	(16) 0.35	(16) WH / YE	(16) 2792	(16) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) GY / BN	(17) 2787	(17) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(17) I	(17) —
(18) 18	(18) 0.35	(18) GY	(18) 745	(18) Left Front Door Ajar Switch Signal	(18) I	(18) —
(19) 19	(19) 0.35	(19) VT / RD	(19) 2791	(19) Left Front Mirror Position Sensor High Reference	(19) I	(19) —
(20) 20	(20) 0.35	(20) BK / BN	(20) 673	(20) Left Outside Rearview Mirror Position Sensor Low Reference	(20) I	(20) —

S79LR Rear Side Door Window Switch - Left



5035058

Connector Part Information

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left Rear
- OEM Connector: 13525907
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

Terminal Part Information

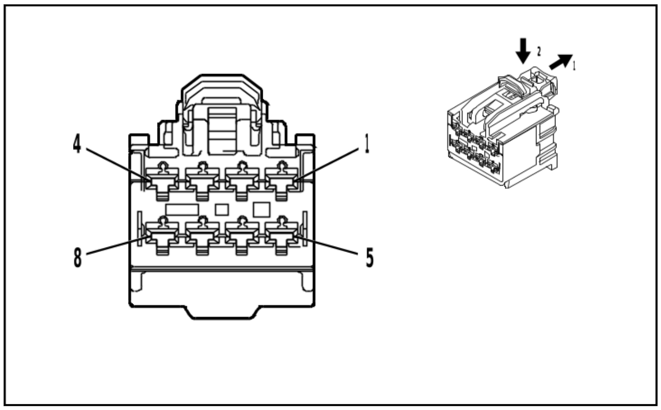
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S79LR Rear Side Door Window Switch - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / GY	(1) 6135	(1) Body Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY	(2) 747	(2) Left Rear Door Ajar Switch Signal	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 1150	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 1150	(7) Ground	(7) I	(7) —
(8) 8	(8) 2.5	(8) RD / BU	(8) 1240	(8) Battery Positive Voltage	(8) I	(8) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 2.0	(9) BU / VT	(9) 668	(9) Left Rear Window Motor Up Control	(9) I	(9) —
(10) 10	(10) 2.0	(10) YE / BU	(10) 669	(10) Left Rear Window Motor Down Control	(10) I	(10) —

S79P Front Side Door Window Switch - Passenger X1



4875738

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 33223792
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 2.8 OCS Series(BK)

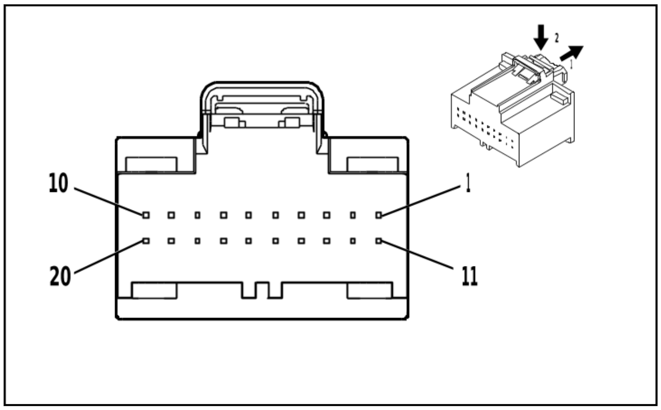
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S79P Front Side Door Window Switch - Passenger X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1250	(1) Ground	(1) I	(1) —
(2) 2	(2) 2	(2) YE / BU	(2) 667	(2) Right Front Window Motor Down Control	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BN / VT	(5) 607	(5) Right Outside Rearview Mirror Heater Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2	(7) GN / GY	(7) 666	(7) Right Front Window Motor Up Control	(7) I	(7) —
(8) 8	(8) 2.5	(8) RD / GY	(8) 3540	(8) Battery Positive Voltage	(8) I	(8) —

S79P Front Side Door Window Switch - Passenger X2



5109537

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 31410-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 0.64 Series(GY)

Terminal Part Information

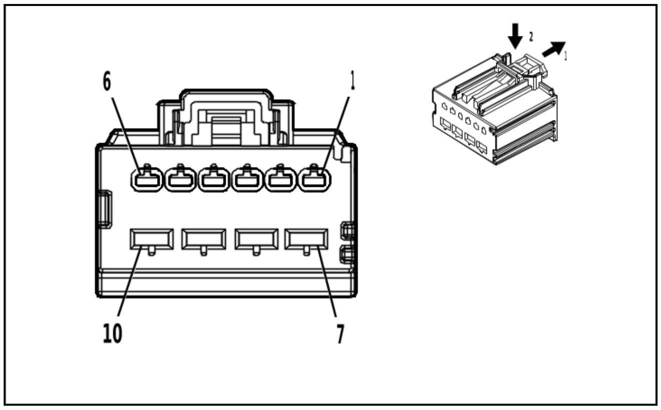
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S79P Front Side Door Window Switch - Passenger X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / RD	(1) 2799	(1) Right Front Mirror Position Sensor High Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BK	(2) 2798	(2) Right Front Mirror Motor Right [+] Left [-] Control	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) YE / BU	(4) 4245	(4) Right Front Door Lock Indicator Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY / VT	(5) 4638	(5) LED Backlight Dimming Control Right Front Door	(5) I	(5) —
(6) 6	(6) 0.35	(6) GY	(6) 1761	(6) Right Side Object Detection LED Control	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) GY	(8) 746	(8) Right Front Door Ajar Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) GN / YE	(9) 6134	(9) Body Control Module LIN Bus 3	(9) I	(9) —
(10) 10	(10) 0.35	(10) VT / WH	(10) 2800	(10) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / YE	(11) 2795	(11) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) YE / VT	(12) 2773	(12) Right Front Door Lock Switch Lock Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) BN / VT	(13) 2774	(13) Right Front Door Lock Switch Unlock Control	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(16) 16	(16) 0.35	(16) VT	(16) 4259	(16) Right Front Door Lock Status Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) YE / VT	(17) 2796	(17) Right Front Mirror Motor Up [+] Down [-] Control	(17) I	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) WH	(19) 2797	(19) Right Front Mirror Motor Common Control	(19) I	(19) —
(20) 20	(20) 0.35	(20) BK / GN	(20) 675	(20) Right Outside Rearview Mirror Position Sensor Low Reference	(20) I	(20) —

S79RR Rear Side Door Window Switch - Right



5035058

Connector Part Information

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right Rear
- OEM Connector: 13525907
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

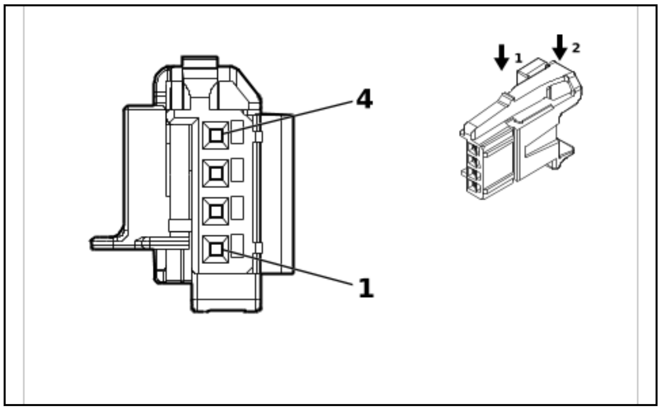
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

S79RR Rear Side Door Window Switch - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / GY	(1) 6135	(1) Body Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY	(2) 748	(2) Right Rear Door Ajar Switch Signal	(2) I	(2) —
3 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 1250	(7) Ground	(7) I	(7) —
(8) 8	(8) 2.5	(8) RD / GY	(8) 3540	(8) Battery Positive Voltage	(8) I	(8) —
(9) 9	(9) 2.0	(9) BU / GY	(9) 670	(9) Right Rear Window Motor Up Control	(9) I	(9) —
(10) 10	(10) 2.0	(10) GN / BK	(10) 671	(10) Right Rear Window Motor Down Control	(10) I	(10) —

S88 Sunroof Tilt Position Switch (CAC)



5417126

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 2294399-2
- Service Connector: 84880893
- Description: 4-Way F 0.64 MQS Series(WH)

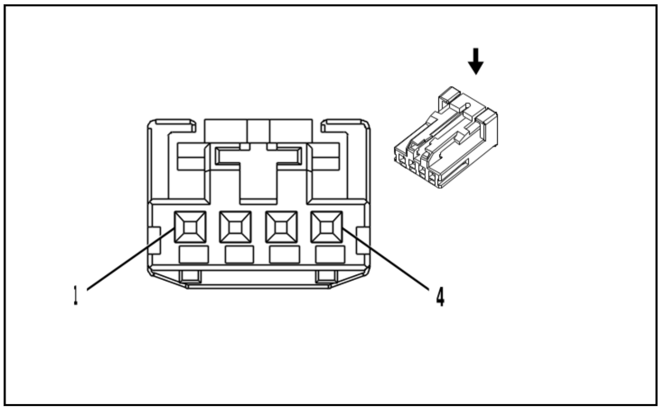
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S88 Sunroof Tilt Position Switch (CAC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 4250	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) WH / GN	(4) 3031	(4) Sunroof Vent Switch Signal	(4) I	(4) —

S91 Parking Brake Control Switch



2717162

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness Extension Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

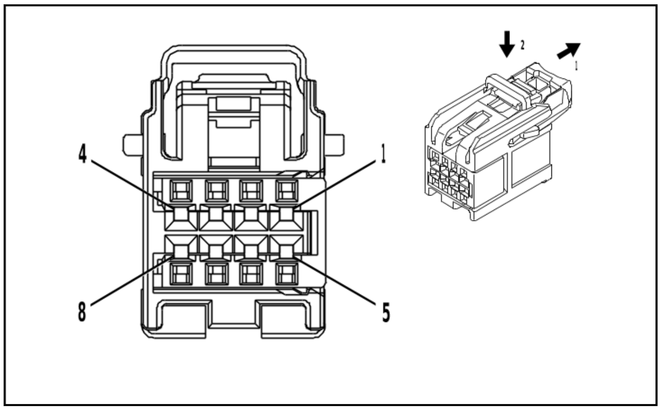
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S91 Parking Brake Control Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / YE	(2) 2731	(2) Brake System Control Module LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BK / WH	(4) 2151	(4) Signal Ground	(4) I	(4) —

S126 Ride Control Switch (NP0 / NQH)



4232228

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness Extension Harness
- OEM Connector: 15526973
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 0.64 OCS Series(GY)

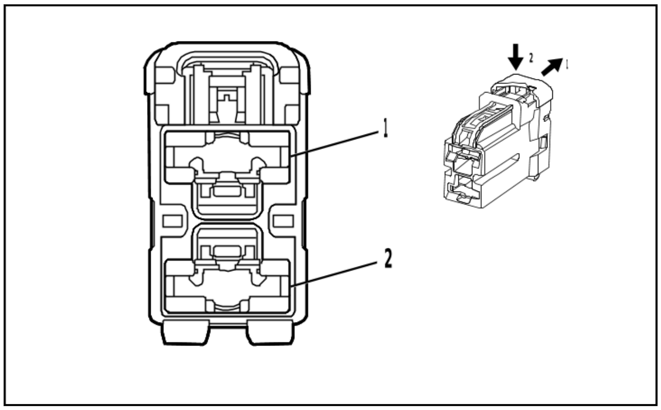
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S126 Ride Control Switch (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 2203	(1) Enhanced Driver Mode 2 Switch Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BK / GY	(3) 2204	(3) Enhanced Driver Mode 1 Switch Low Reference	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE	(4) 6817	(4) LED Backlight Dimming Control 1	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK	(5) 2050	(5) Ground	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) VT / GN	(8) 39	(8) Run/Crank Ignition 1 Voltage	(8) I	(8) —

T1 DC/AC Converter Control Module X1



2453116

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-0724-30
- Service Connector: 85011842
- Description: 2-Way F 9.5 Series(BK)

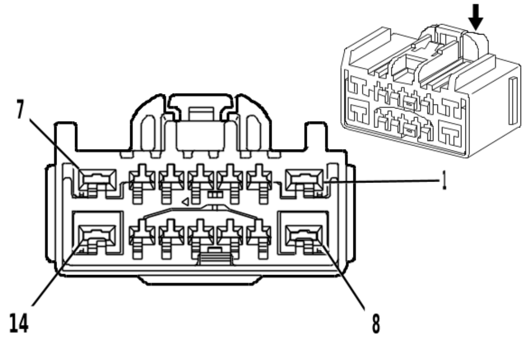
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-22 (RD)	No Tool Required

T1 DC/AC Converter Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BN / BK	(1) 4629	(1) DC/AC Inverter Control	(1) I	(1) —
(2) 2	(2) 5	(2) BK	(2) 550	(2) Ground	(2) I	(2) —

T1 DC/AC Converter Control Module X2 (KC9)



1540775

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7631-90
- Service Connector: 13513603
- Description: 14-Way F 1.5, 2.8 YESC Series(BU)

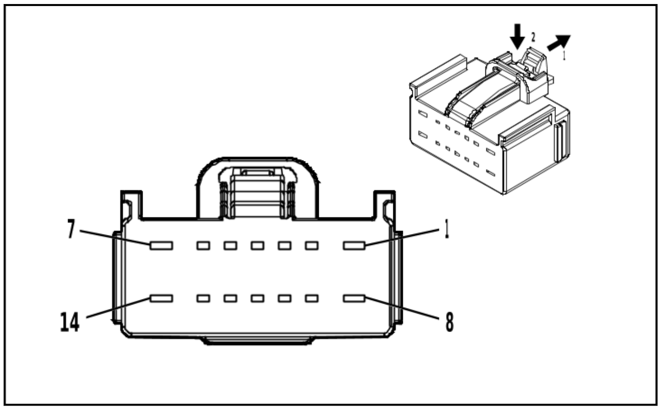
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575850	J-35616-2A (GY)	J-38125-557
II	84962855	J-35616-4A (PU)	J-38125-11A

T1 DC/AC Converter Control Module X2 (KC9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) AC Power Outlet Sensor High Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / GY	(3) 539	(3) Run/Crank Ignition 1 Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / GN	(4) 4628	(4) DC/AC Inverter Relay Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / BN	(5) 6807	(5) DC/AC Inverter Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BK / WH	(7) 10120	(7) AC Outlet 2 Phase A Control	(7) II	(7) —
(8) 8	(8) 0.75	(8) RD	(8) 10118	(8) AC Outlet Phase B Control	(8) II	(8) —
(9) 9	(9) 0.75	(9) BARE	(9) 10116	(9) AC Outlet Low Reference	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / BU	(10) 6133	(10) Body Control Module LIN Bus 2	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / BN	(12) 2266	(12) DC/AC Inverter Control 2	(12) I	(12) —
(13) 13	(13) 0.75	(13) BK	(13) 10119	(13) AC Outlet 2 Low Reference	(13) I	(13) —
(14) 14	(14) 0.75	(14) RD / WH	(14) 10121	(14) AC Outlet 2 Phase B Control	(14) II	(14) —

T1 DC/AC Converter Control Module X2 (KCA)



4934172

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-30
- Service Connector: 13513604
- Description: 14-Way F 1.5, 2.8 YESC Series(BK)

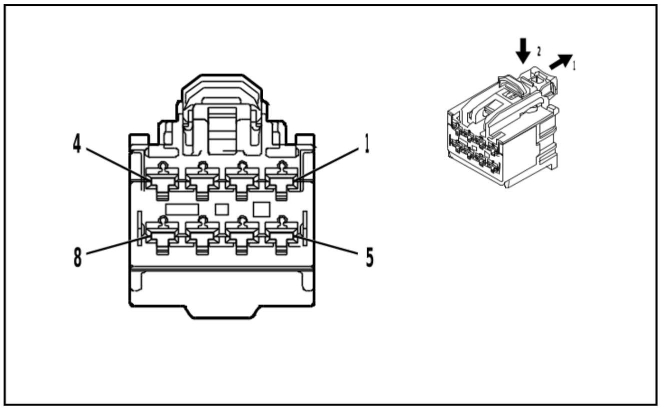
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575850	J-35616-2A (GY)	J-38125-557
II	84962855	J-35616-4A (PU)	J-38125-11A

T1 DC/AC Converter Control Module X2 (KCA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) AC Power Outlet Sensor High Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / GY	(3) 539	(3) Run/Crank Ignition 1 Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / GN	(4) 4628	(4) DC/AC Inverter Relay Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / BN	(5) 6807	(5) DC/AC Inverter Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BK / WH	(7) 10120	(7) AC Outlet 2 Phase A Control	(7) II	(7) —
(8) 8	(8) 0.75	(8) RD	(8) 10118	(8) AC Outlet Phase B Control	(8) II	(8) —
(9) 9	(9) 0.75	(9) BARE	(9) 10116	(9) AC Outlet Low Reference	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / BU	(10) 6133	(10) Body Control Module LIN Bus 2	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / BN	(12) 2266	(12) DC/AC Inverter Control 2	(12) I	(12) —
(13) 13	(13) 0.75	(13) BK	(13) 10119	(13) AC Outlet 2 Low Reference	(13) I	(13) —
(14) 14	(14) 0.75	(14) RD / WH	(14) 10121	(14) AC Outlet 2 Phase B Control	(14) II	(14) —

T3 Audio Amplifier X1



4875738

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33223792
- Service Connector: 19369366
- Description: 8-Way F 2.8 OCS Series(BK)

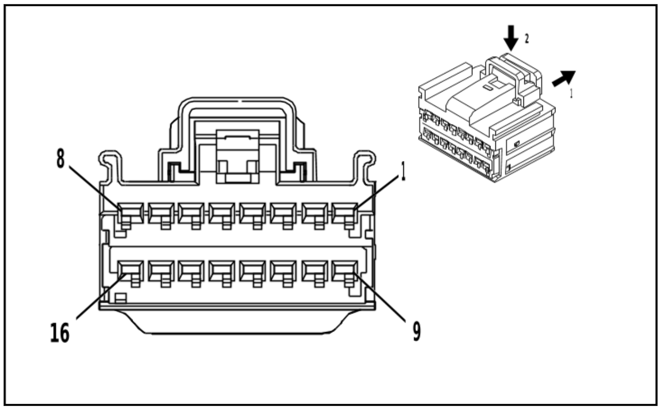
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

T3 Audio Amplifier X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE	(1) 200	(1) Right Front Speaker 1 [+] Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 2.5	(3) BU	(3) 201	(3) Left Front Speaker 1 [+] Control	(3) I	(3) —
(4) 4	(4) 3	(4) RD / YE	(4) 3740	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 2.5	(5) YE / BK	(5) 117	(5) Right Front Speaker [-] Control 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BN / BU	(7) 118	(7) Left Front Speaker [-] Control 1	(7) I	(7) —
(8) 8	(8) 3	(8) BK / WH	(8) 651	(8) Signal Ground	(8) I	(8) —

T3 Audio Amplifier X2



4332214

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 15512506
- Service Connector: 13591061
- Description: 16-Way F 1.5 OCS Series(BK)

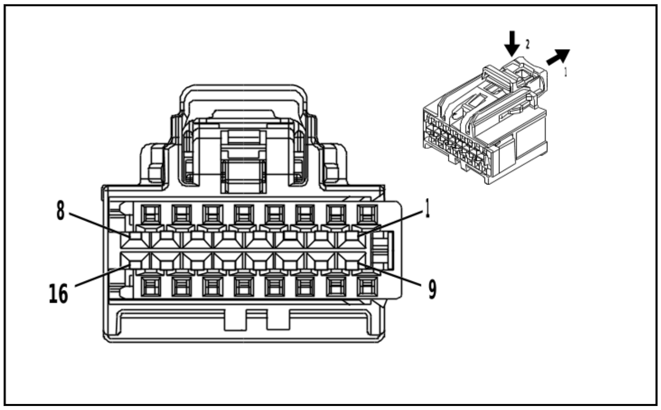
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84757974	J-35616-2A (GY)	J-38125-215A

T3 Audio Amplifier X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) WH / YE	(2) 1853	(2) Right Front Midrange Speaker [+] Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / VT	(3) 1857	(3) Left Front Midrange Speaker [+] Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 46	(4) Right Rear Speaker [+] Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN	(5) 199	(5) Left Rear Speaker [+] Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE / WH	(7) 1860	(7) Front Center Speaker [+] Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) BN / BK	(10) 1953	(10) Right Front Midrange Speaker [-] Control	(10) I	(10) —
(11) 11	(11) 0.5	(11) BU / BN	(11) 1957	(11) Left Front Midrange Speaker [-] Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) BU / BK	(12) 115	(12) Right Rear Speaker [-] Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) GN / BK	(13) 116	(13) Left Rear Speaker [-] Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) BU / YE	(15) 1960	(15) Front Center Speaker [-] Control	(15) I	(15) —
16	—	—	—	Not Occupied	—	—

T3 Audio Amplifier X4



4256181

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35016345
- Service Connector: 13519740
- Description: 16-Way F 0.64 OCS Series(BN)

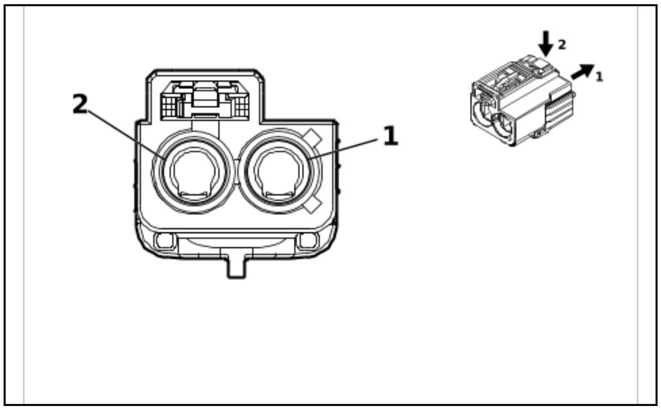
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A
II	Service by Cable	J-35616-64B (L-BU)	J-35125-215A

T3 Audio Amplifier X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) AUTOSAR CAN Bus [-] 5 Serial Data	(8) I	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) WH	(10) 8580	(10) Automotive Audio Bus A2B Serial Data 1 [+]	(10) II	(10) —
(11) 11	(11) 0.35	(11) GN	(11) 8579	(11) Automotive Audio Bus A2B Serial Data 1 [-]	(11) II	(11) —
12 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) BU / WH	(16) 4985	(16) AUTOSAR CAN Bus [+] 5 Serial Data	(16) I	(16) —

T4P High Frequency Antenna X1 (- MAM)



5661671

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516425
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(VT)

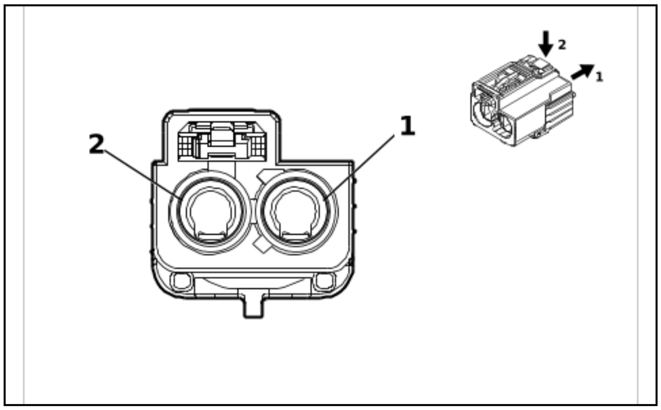
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X1 (- MAM)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(GPS/Cell) Coaxial Antenna Cell/GPS combined Signal	I	—

T4P High Frequency Antenna X1 (MAM)



5979943

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516427
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BN)

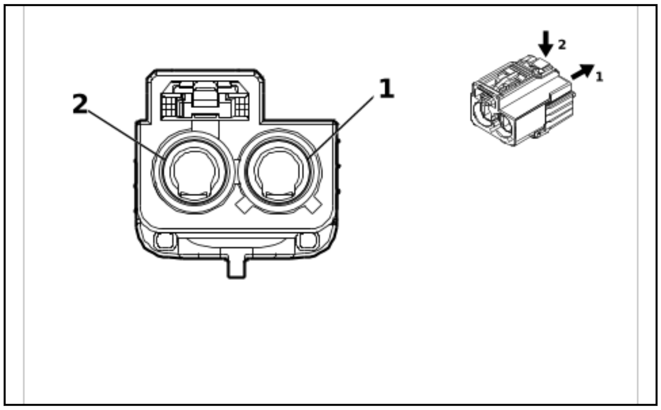
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X1 (MAM)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(GPS/Cell) Coaxial Antenna Cell/GPS combined Signal	I	—

T4P High Frequency Antenna X1 (U2K)



5907715

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516431
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

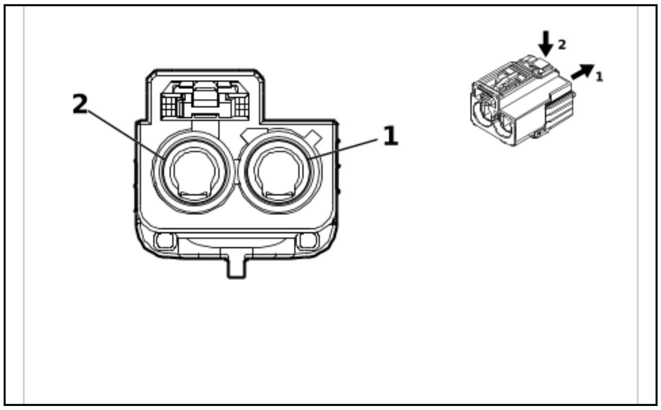
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X1 (U2K)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

T4P High Frequency Antenna X2 (- U2Q - U2K)



5633474

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516422
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BK)

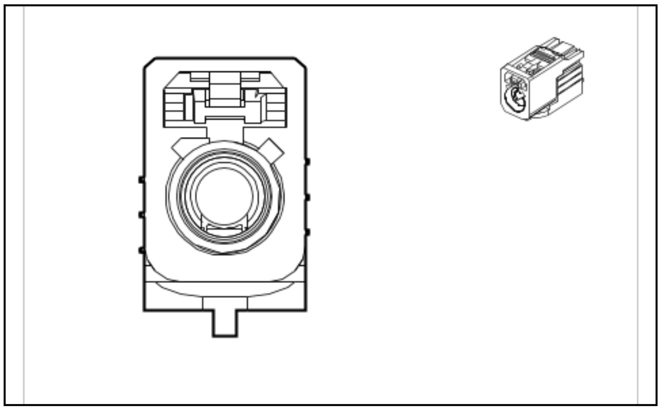
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X2 (- U2Q - U2K)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(DAB/DMB) Coaxial Antenna DAB Signal	I	—

T4P High Frequency Antenna X2 (U2Q)



5633209

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516408
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

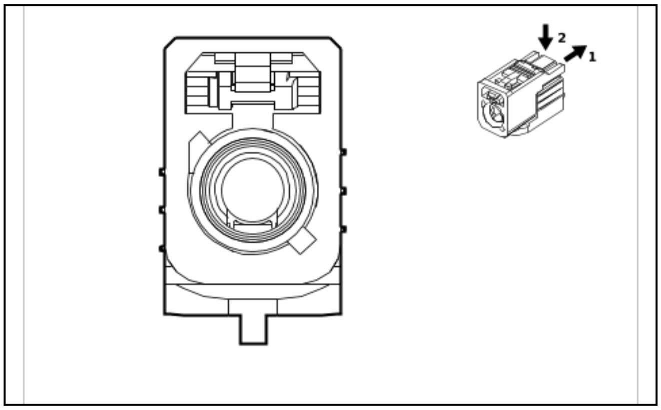
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X2 (U2Q)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

T4TA Auxiliary Wireless Communication Interface Antenna



5518436

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13516416
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BG)

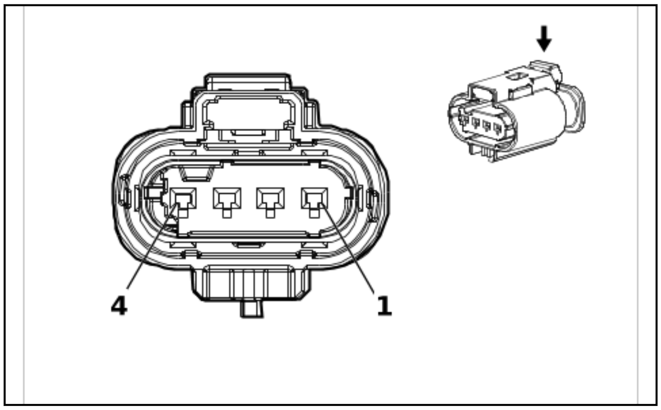
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4TA Auxiliary Wireless Communication Interface Antenna

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	WiFi Antenna Coaxial Signal	I	—

T8A Ignition Coil 1



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: 84889372
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

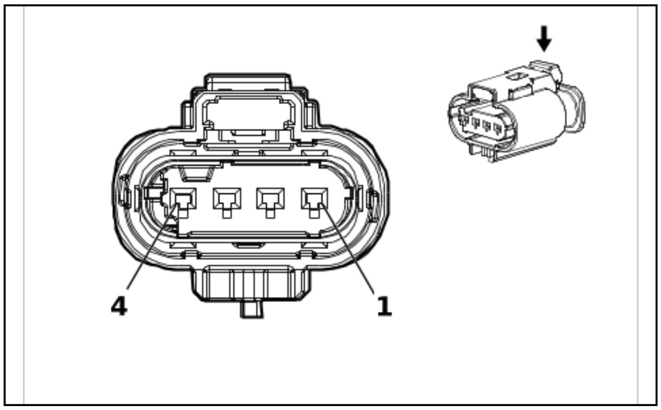
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8A Ignition Coil 1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / VT	(3) 2121	(3) Ignition Control 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8B Ignition Coil 2



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: 84889372
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

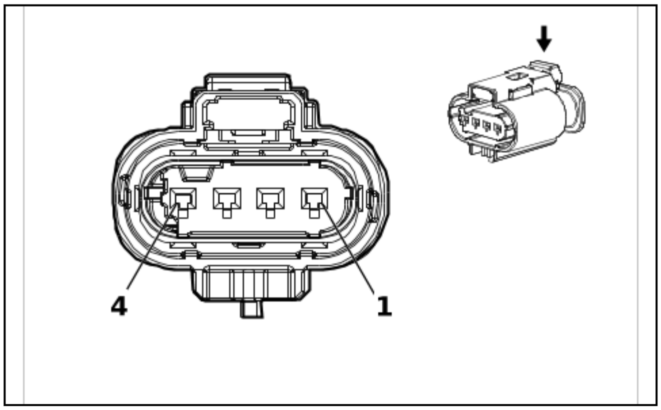
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8B Ignition Coil 2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / WH	(3) 2122	(3) Ignition Control 2	(3) I	(3) —
(4) 4	(4) 0.75	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8C Ignition Coil 3



5402120

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: 84889372
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

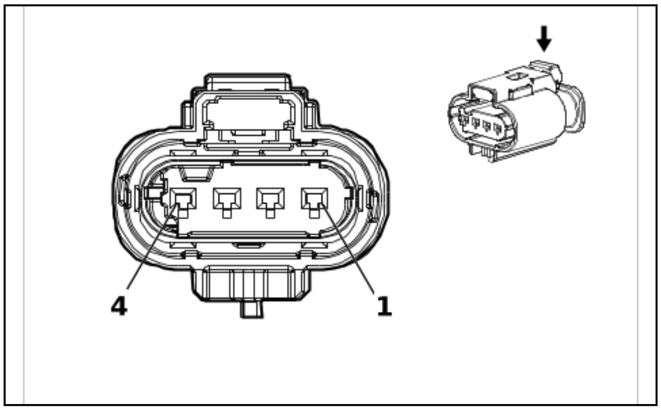
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8C Ignition Coil 3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) GN / BU	(3) 2123	(3) Ignition Control 3	(3) I	(3) —
(4) 4	(4) 0.75	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8D Ignition Coil 4



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: 84889372
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

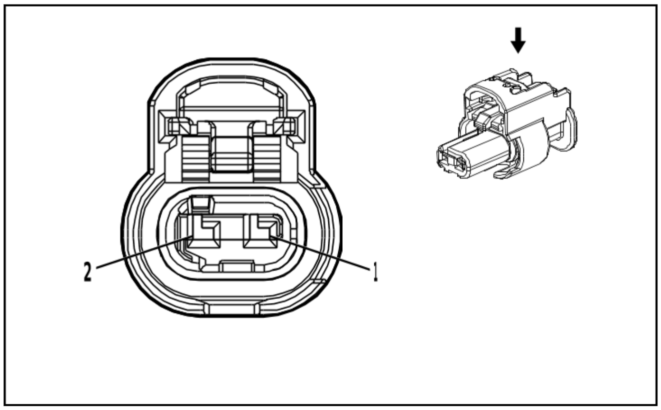
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8D Ignition Coil 4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) YE / BU	(3) 2124	(3) Ignition Control 4	(3) I	(3) —
(4) 4	(4) 0.75	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T10KA Low Frequency Console Number 2 Antenna



4690744

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

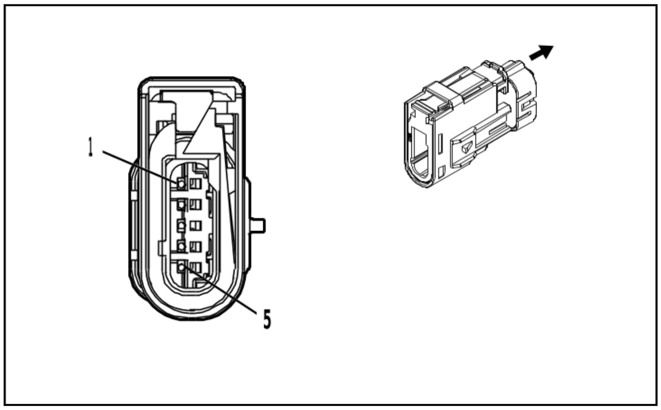
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10KA Low Frequency Console Number 2 Antenna

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 3552	(1) Interior Passive Entry Antenna 1 High Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 3553	(2) Interior Passive Entry Antenna 1 Low Signal	(2) I	(2) —

T10M Low Frequency Front Side Door Outside Handle Antenna - Left



4808321

Connector Part Information

- Harness Type: Vehicle Access & Starting Security
- OEM Connector: 13519366
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

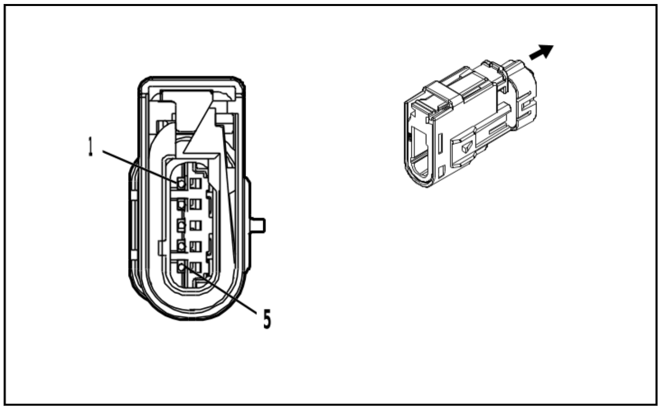
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T10M Low Frequency Front Side Door Outside Handle Antenna - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) VT	(2) 4301	(2) Passive Entry Left Antenna Signal High	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) VT / GY	(4) 4302	(4) Passive Entry Left Antenna Signal Low	(4) I	(4) —
5	—	—	—	Not Occupied	—	—

T10N Low Frequency Front Side Door Outside Handle Antenna - Right



4808321

Connector Part Information

- Harness Type: Vehicle Access & Starting Security
- OEM Connector: 13519366
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

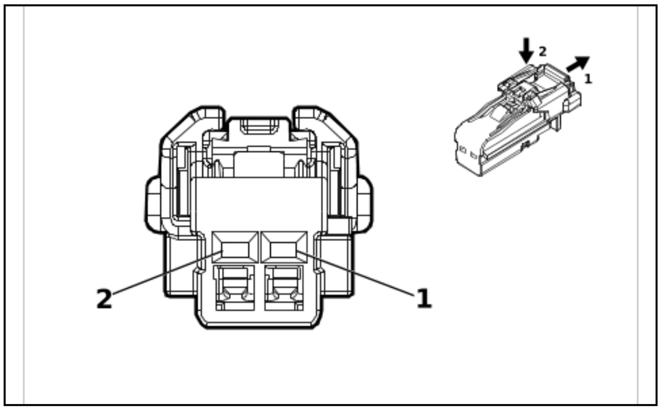
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T10N Low Frequency Front Side Door Outside Handle Antenna - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) GN / YE	(2) 4303	(2) Passive Entry Right Antenna Signal High	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) GN / BK	(4) 4304	(4) Passive Entry Right Antenna Signal Low	(4) I	(4) —
5	—	—	—	Not Occupied	—	—

T10UA Low Frequency Console Antenna



4115691

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

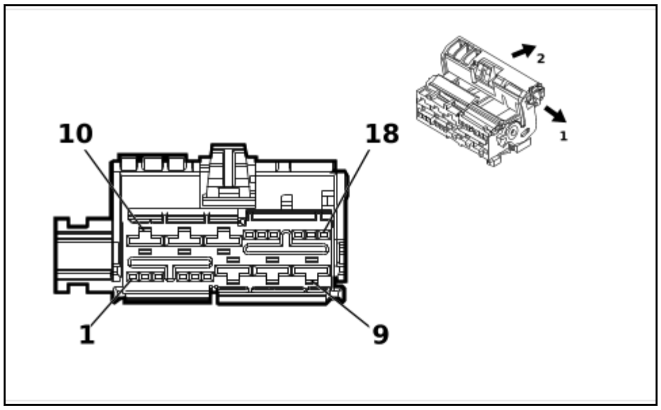
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

T10UA Low Frequency Console Antenna

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 4996	(1) Immobilizer Antenna Signal [+]	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / GY	(2) 4997	(2) Immobilizer Antenna Low Signal	(2) I	(2) —

T19 Multifunction Power Supply Converter



3825662

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35509388
- Service Connector: 13549243
- Description: 18-Way F 0.64 MTS, 6.3 MCP Series(BK)

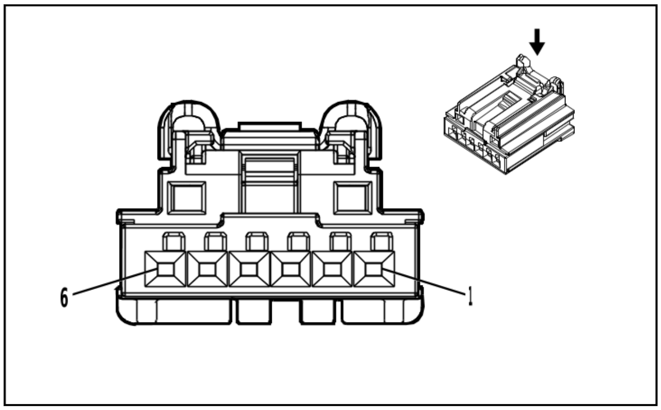
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A
II	19367600	J-35616-42 (RD)	J-38125-556

T19 Multifunction Power Supply Converter

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) VT / GN	(4) 4320	(4) Powertrain Sensor Bus Enable	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / BK	(5) 625	(5) Starter Enable Relay Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 3750	(7) Ground	(7) II	(7) —
(8) 8	(8) 2.5	(8) RD / VT	(8) 2640	(8) Battery Positive Voltage	(8) II	(8) —
(9) 9	(9) 2.5	(9) RD / GN	(9) 2173	(9) 12V Regulated Supply Voltage 2	(9) II	(9) —
(10) 10	(10) 2.5	(10) RD / YE	(10) 2172	(10) 12V Regulated Supply Voltage 1	(10) II	(10) —
(11) 11	(11) 2.5	(11) RD / BU	(11) 2540	(11) Battery Positive Voltage	(11) II	(11) —
(12) 12	(12) 2.5	(12) BK	(12) 3750	(12) Ground	(12) II	(12) —
(13) 13	(13) 0.5	(13) BU / GY	(13) 4054	(13) Private Serial Data Powertrain CAN Bus [-] Serial Data	(13) I	(13) —
(14) 14	(14) 0.5	(14) BU / GY	(14) 4054	(14) Private Serial Data Powertrain CAN Bus [-] Serial Data	(14) I	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 4055	(15) Private Serial Data Powertrain CAN Bus [+] Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4055	(16) Private Serial Data Powertrain CAN Bus [+] Serial Data	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—

T22 Wireless Accessory Charging Module (K4C)



5020940

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness Extension Harness
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

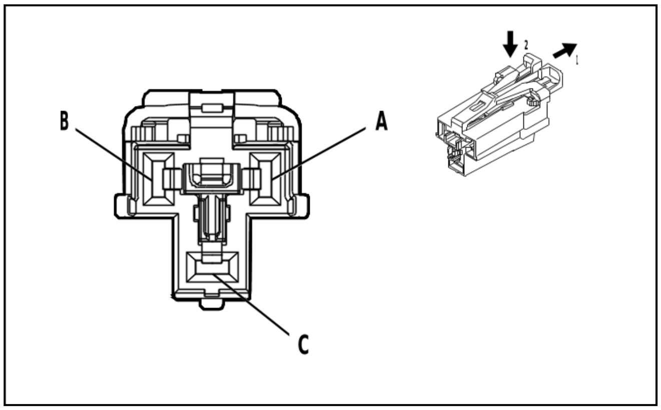
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

T22 Wireless Accessory Charging Module (K4C)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 6340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 2050	(2) Ground	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / YE	(3) 4984	(3) AUTOSAR CAN Bus [-] 5 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / WH	(4) 4985	(4) AUTOSAR CAN Bus [+] 5 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / YE	(5) 4984	(5) AUTOSAR CAN Bus [-] 5 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) BU / WH	(6) 4985	(6) AUTOSAR CAN Bus [+] 5 Serial Data	(6) I	(6) —

X80L Front Floor Console Accessory Power Rear Receptacle (KCA)



4872413

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 33386302
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 2.8 APEX Series(GY)

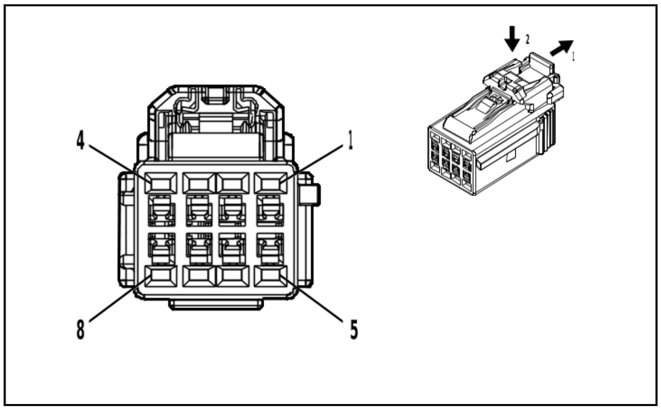
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

X80L Front Floor Console Accessory Power Rear Receptacle (KCA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	1	VT	1001	Retained Accessory Power Ignition Voltage	I	—
B	—	—	—	Not Occupied	—	—
C	1	BK	2050	Ground	I	—

X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI6)



5086387

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

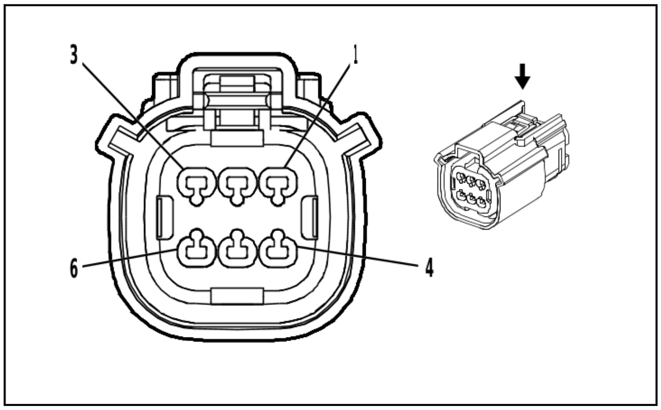
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK	(7) 2050	(7) Ground	(7) I	(7) —
8	—	—	—	Not Occupied	—	—

X81AP Pickup Box Accessory Power Receptacle - 110V AC



1986157

Connector Part Information

- Harness Type: Body Rear Wiring Harness
- OEM Connector: 33472-0616
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

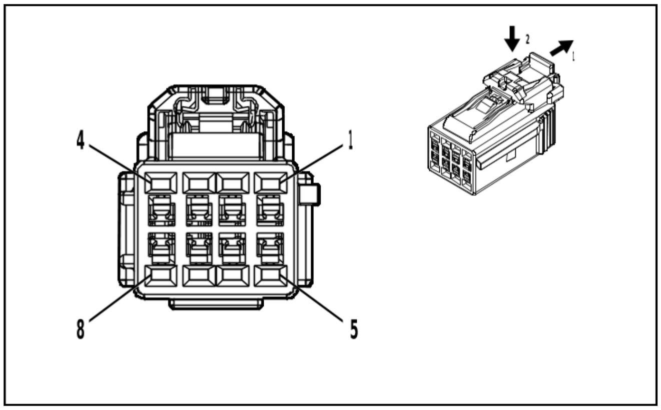
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X81AP Pickup Box Accessory Power Receptacle - 110V AC

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) VT / RD	(1) 4049	(1) AC Power Outlet Sensor High Reference	(1) I	(1) —
(2) 2	(2) 0	(2) GN / BN	(2) 2266	(2) DC/AC Inverter Control 2	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0	(4) BK / WH	(4) 10120	(4) AC Outlet 2 Phase A Control	(4) I	(4) —
(5) 5	(5) 0	(5) BK	(5) 850	(5) Ground	(5) I	(5) —
(6) 6	(6) 0	(6) RD / WH	(6) 10121	(6) AC Outlet 2 Phase B Control	(6) I	(6) —

X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC



5086387

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

Terminal Part Information

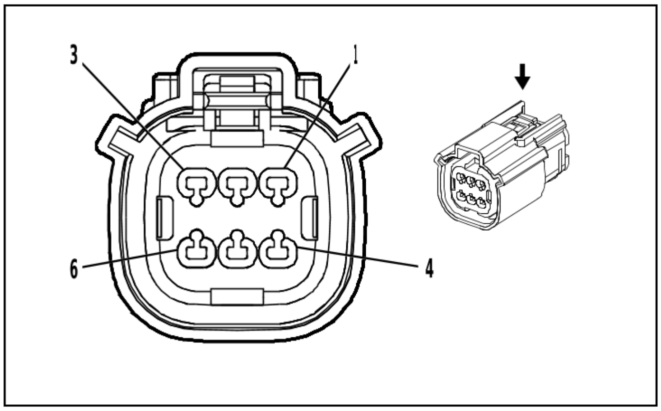
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0	(7) BK	(7) 2050	(7) Ground	(7) I	(7) —
8	—	—	—	Not Occupied	—	—

X81BP Pickup Box Accessory Power Receptacle - 220V AC



1986157

Connector Part Information

- Harness Type: Pickup Box Accessory Power Receptacle - 220V AC
- OEM Connector: 13577153
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

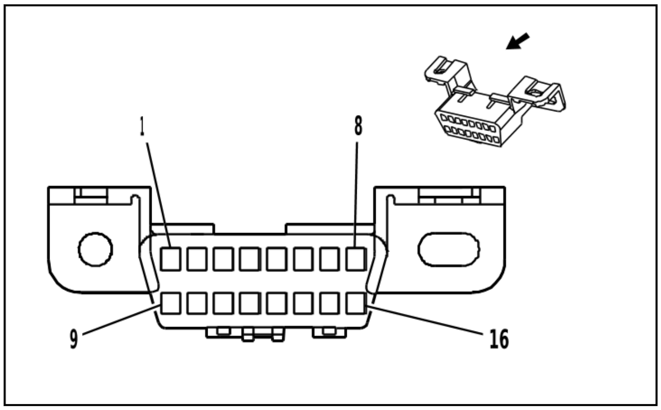
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X81BP Pickup Box Accessory Power Receptacle - 220V AC

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) VT / RD	(1) 4049	(1) AC Power Outlet Sensor High Reference	(1) I	(1) —
(2) 2	(2) 0	(2) GN / BN	(2) 2266	(2) DC/AC Inverter Control 2	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0	(4) BK / WH	(4) 10120	(4) AC Outlet 2 Phase A Control	(4) I	(4) —
(5) 5	(5) 0	(5) BK	(5) 850	(5) Ground	(5) I	(5) —
(6) 6	(6) 0	(6) RD / WH	(6) 10121	(6) AC Outlet 2 Phase B Control	(6) I	(6) —

X84 Data Link Connector



68793

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12110250
- Service Connector: 12110250
- Description: 16-Way F 150 Metri-Pack Series(BK)

Terminal Part Information

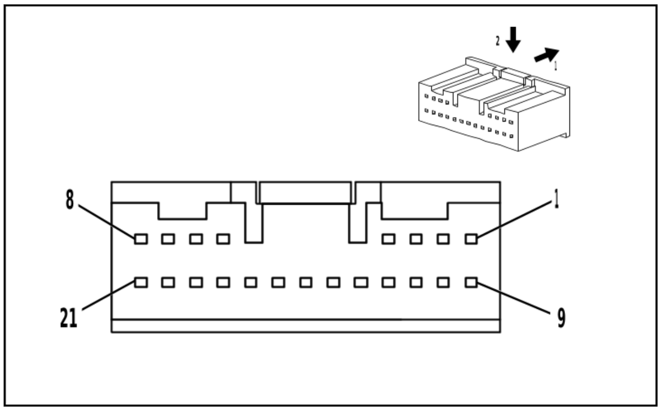
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13580059	J-35616-14 (GN)	J-38125-12A
II	Service by Cable	EL-35616-58 (BK)	EL-38125-58

X84 Data Link Connector

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BN	(1) 4983	(1) AUTOSAR CAN Bus [+] 7 Serial Data	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN	(2) 2578	(2) Private Serial Data Presentation CAN Bus [+] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.35	(3) YE / WH	(3) 4973	(3) Ethernet Bus 1R [+]	(3) II	(3) —
(4) 4	(4) 0.75	(4) BK	(4) 2050	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 2151	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE	(6) 4981	(6) AUTOSAR CAN Bus [+] 6 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) VT	(7) 2580	(7) Private Serial Data Presentation CAN Bus [+] 2 Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) WH	(8) 7207	(8) Ethernet Bus 1 Enable Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH	(9) 4982	(9) AUTOSAR CAN Bus [-] 7 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BN	(10) 2577	(10) Private Serial Data Presentation CAN Bus [-] 1 Serial Data	(10) I	(10) —
(11) 11	(11) 0.35	(11) YE	(11) 4972	(11) Ethernet Bus 1R [-]	(11) II	(11) —
(12) 12	(12) 0.35	(12) GN / WH	(12) 4975	(12) Ethernet Bus 1T [+]	(12) II	(12) —
(13) 13	(13) 0.35	(13) GN	(13) 4974	(13) Ethernet Bus 1T [-]	(13) II	(13) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(14) 14	(14) 0.35	(14) WH	(14) 4980	(14) AUTOSAR CAN Bus [-] 6 Serial Data	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY	(15) 2579	(15) Private Serial Data Presentation CAN Bus [-] 2 Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) RD / BU	(16) 3240	(16) Battery Positive Voltage	(16) I	(16) —

X85 Steering Wheel Airbag Coil X1



3960237

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: 13510218
- Description: 21-Way F 0.64 Series(YE)

Terminal Part Information

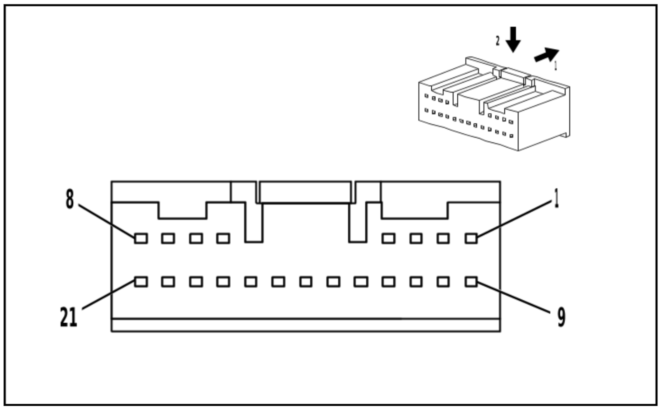
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575742	J-35616-64B (L-BU)	J-38125-215A
II	13575865	J-35616-64B (L-BU)	J-38125-215A

X85 Steering Wheel Airbag Coil X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) II	(7) —
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) GN / GY	(9) 10652	(9) Radio LIN Bus 1	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / BK	(10) 2858	(10) Body Control Module LIN Bus 12	(10) I	(10) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(11) 11	(11) 0.35	(11) GY / GN	(11) 11874	(11) Cruise Control Bank 1 Switch Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) BK / VT	(12) 1449	(12) Steering Wheel Resistor Ladder Low Reference	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) RD / GN	(14) 5140	(14) Battery Positive Voltage	(14) I	(14) —
(15) 15	(15) 0.35	(15) BN / GN	(15) 11875	(15) Cruise Control Bank 2 Switch Signal	(15) I	(15) —
16 - 19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5	(20) BK	(20) 2050	(20) Ground	(20) I	(20) —
(21) 21	(21) 0.35	(21) RD / BN	(21) 10040	(21) Battery Positive Voltage	(21) I	(21) —

X85 Steering Wheel Airbag Coil X2



3960237

Connector Part Information
- Harness Type: Steering Wheel Airbag Coil
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series(YE)

Terminal Part Information

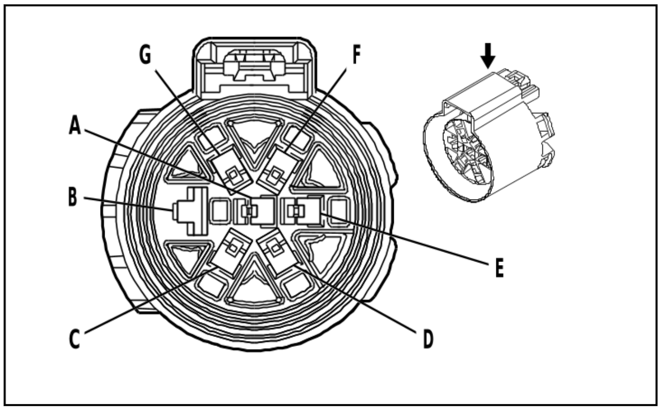
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X85 Steering Wheel Airbag Coil X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 51	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) I	(7) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) I	(8) —
(9) 9	(9) 0.35	(9) RD / BN	(9) 40	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK	(10) 50	(10) Ground	(10) I	(10) —
11 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) GY / GN	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) RD / GN	(16) 5140	(16) Battery Positive Voltage	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) BK / VT	(18) 1449	(18) Steering Wheel Resistor Ladder Low Reference	(18) I	(18) —
(19) 19	(19) 0.35	(19) BN / GN	(19) 1884	(19) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(19) I	(19) —
(20) 20	(20) 35	(20) GN / BK	(20) 2858	(20) Body Control Module LIN Bus 12	(20) I	(20) —
(21) 21	(21) 0.35	(21) GN / BK	(21) 10652	(21) Radio LIN Bus 1	(21) I	(21) —

X88B Tow Vehicle Electrical Receptacle



2056936

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13857223
- Service Connector: 86816072
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed(BK)

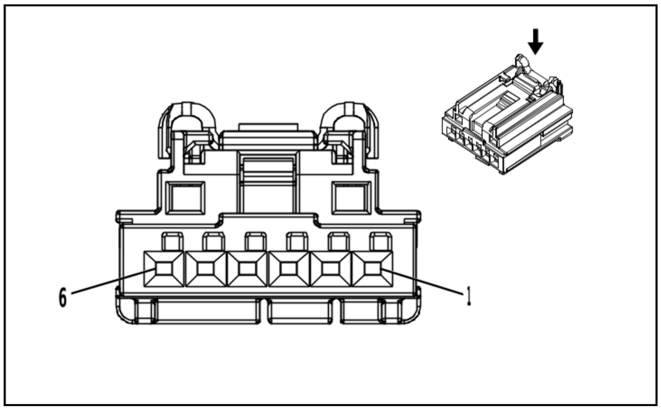
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

X88B Tow Vehicle Electrical Receptacle

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	0.75 0.75	GN / WH WH / GN	5189 1624	Trailer Backup Lamp Control Trailer Backup Lamp Control	II II	Z82+ U1D Z82- U1D
B	5	WH	22	Trailer Ground	I	—
C	2.5	BU	47	Trailer Auxiliary Control	II	—
D	0.75	GN / VT	1619	Right Rear Trailer Stop/Turn Lamp Control	II	—
E	3	RD / GY	1042	Battery Positive Voltage	II	—
F	1.5	GY / BN	2109	Trailer Park Lamp Control	II	—
G	0.75	YE / GY	1618	Left Rear Trailer Stop/Turn Lamp Control	II	—

X92C Single Charge Only 2nd Row Receptacle - Floor Console Rear



3960313

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

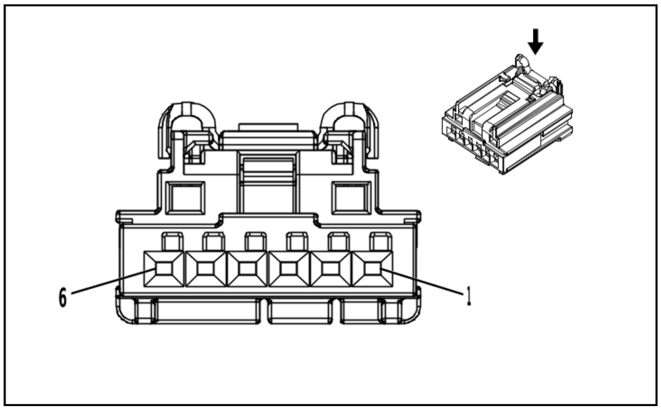
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92C Single Charge Only 2nd Row Receptacle - Floor Console Rear

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT	(1) 4701	(1) Retained Accessory Power Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BK	(3) 2050	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92G USB 2 Port Receptacle X1



3960313

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series(BK)

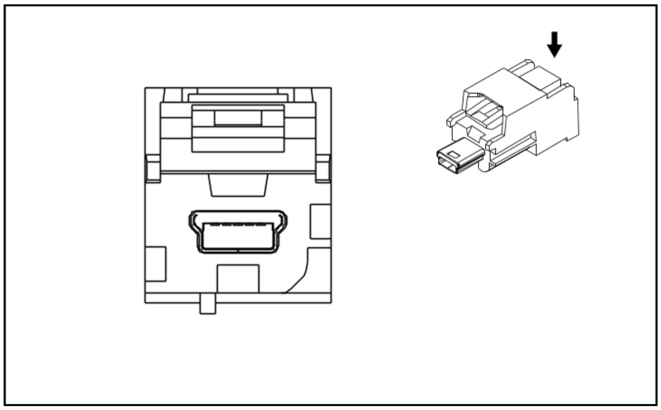
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92G USB 2 Port Receptacle X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / WH	(1) 7240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 2151	(3) Signal Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92G USB 2 Port Receptacle X2



3028807

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 13585100
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

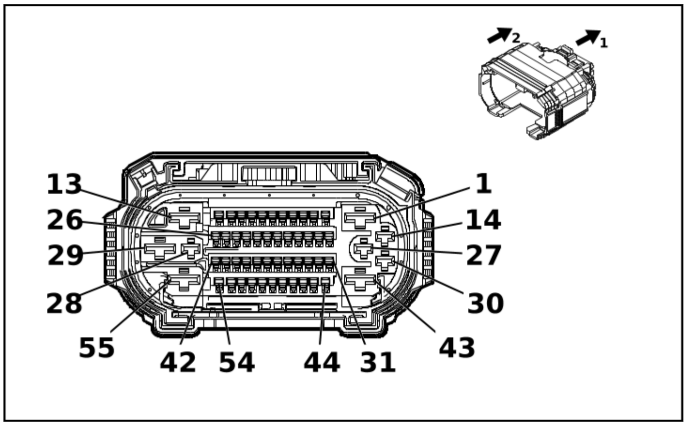
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X92G USB 2 Port Receptacle X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

X100 Chassis Wiring Harness to Body Wiring Harness



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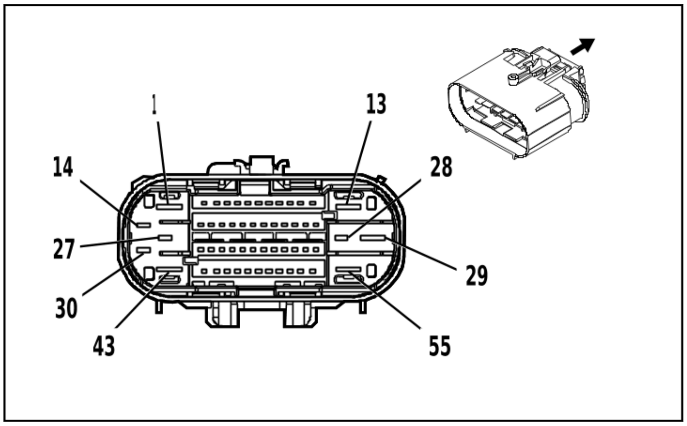


4994369

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35716591
- Service Connector: 19371184
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35716588
- Service Connector: 84727363
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370818	J-35616-12 (BU)	J-38125-553
II	84634921	J-35616-42 (RD)	J-38125-212
III	84847992	J-35616-32 (OG)	J-38125-36
IV	84867140	J-35616-13 (BU)	J-38125-553
V	84992391	J-35616-5 (PU)	J-38125-36

X100 Chassis Wiring Harness to Body Wiring Harness

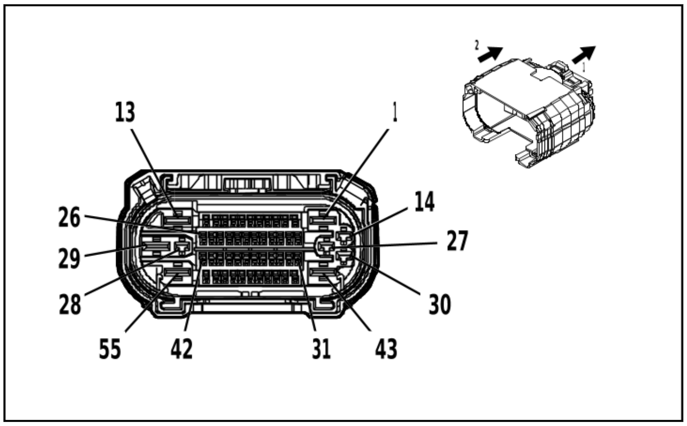
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 6	(1) GY	(1) 4368	(1) II	(1) —	(1) Right Park Brake Motor Low Reference	(1) 1	(1) 2.5	(1) GY	(1) 4368	(1) III	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5705	(2) I	(2) —	(2) Powertrain Main Relay Control	(2) 2	(2) 0.5	(2) VT / BU	(2) 5705	(2) IV	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 150	(3) I	(3) —	(3) Ground	(3) 3	(3) 0.5	(3) BK	(3) 150	(3) IV	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.5	(5) BU / YE	(5) 4979	(5) I	(5) —	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) 5	(5) 0.5	(5) BU / YE	(5) 4979	(5) IV	(5) —
(6) 6	(6) 0.5	(6) WH	(6) 4978	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) 6	(6) 0.5	(6) WH	(6) 4978	(6) IV	(6) —
7	—	—	—	—	—	Not Occupied	7	—	—	—	—	—
(8) 8	(8) 0.5	(8) BU / WH	(8) 1334	(8) I	(8) —	(8) Left Rear Turn Signal Lamp Control 2	(8) 8	(8) 0.5	(8) BU / WH	(8) 1334	(8) IV	(8) —
(9) 9	(9) 0.75	(9) BU / VT	(9) 1335	(9) I	(9) —	(9) Right Rear Turn Signal Lamp Control 2	(9) 9	(9) 0.5	(9) BU / VT	(9) 1335	(9) IV	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—
(11) 11	(11) 0.5	(11) BN / BU	(11) 6993	(11) I	(11) —	(11) Left Rear Park Lamp Control	(11) 11	(11) 0.5	(11) BN / BU	(11) 6993	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BN / GY	(12) 6995	(12) I	(12) —	(12) Right Rear Park Lamp Control	(12) 12	(12) 0.5	(12) BN / GY	(12) 6995	(12) IV	(12) —
(13) 13	(13) 6	(13) RD / BN	(13) 440	(13) II	(13) —	(13) Battery Positive Voltage	(13) 13	(13) 6	(13) RD / BN	(13) 440	(13) III	(13) —
14	—	—	—	—	—	Not Occupied	14	—	—	—	—	—
(15) 15	(15) 0.75	(15) BU / WH	(15) 10119	(15) I	(15) —	(15) AC Outlet 2 Low Reference	(15) 15	(15) 0.75	(15) BK	(15) 10119	(15) IV	(15) —
(16) 16	(16) 0.75	(16) BK / WH	(16) 10120	(16) I	(16) —	(16) AC Outlet 2 Phase A Control	(16) 16	(16) 0.75	(16) BK / WH	(16) 10120	(16) IV	(16) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(17) 17	(17) 0.75	(17) RD / WH	(17) 10121	(17) I	(17) —	(17) AC Outlet 2 Phase B Control	(17) 17	(17) 0.75	(17) RD / WH	(17) 10121	(17) IV	(17) —
18 - 19	—	—	—	—	—	Not Occupied	18 - 19	—	—	—	—	—
(20) 20	(20) 0.5	(20) GY / VT	(20) 2691	(20) I	(20) —	(20) Rear Closure Actuator Lock Control	(20) 20	(20) 0.5	(20) GY / VT	(20) 2691	(20) IV	(20) —
(21) 21	(21) 0.5	(21) GY / BK	(21) 2680	(21) I	(21) —	(21) Lock Actuators Unlock Control 2	(21) 21	(21) 0.5	(21) GY / BK	(21) 2680	(21) IV	(21) —
22 - 23	—	—	—	—	—	Not Occupied	22 - 23	—	—	—	—	—
(24) 24	(24) 0.75	(24) RD / BU	(24) 840	(24) I	(24) —	(24) Battery Positive Voltage	(24) 24	(24) 0.75	(24) RD / BU	(24) 840	(24) IV	(24) —
(25) 25	(25) 0.5	(25) GN / YE	(25) 6846	(25) I	(25) —	(25) Rear License Plate Lamp Control	(25) 25	(25) 0.35	(25) GN / YE	(25) 6846	(25) IV	(25) —
(26) 26	(26) 0.5	(26) BN / GN	(26) 4246	(26) I	(26) —	(26) Identification Lamp Control	(26) 26	(26) 0.5	(26) BN / GN	(26) 4246	(26) IV	(26) —
27	—	—	—	—	—	Not Occupied	27	—	—	—	—	—
(28) 28	(28) —	(28) —	(28) —	(28) —	(28) —	(28) Ground	(28) 28	(28) 2.5	(28) BK	(28) 150	(28) V	(28) —
(29) 29	(29) 6	(29) GY / BK	(29) 4369	(29) II	(29) —	(29) Left Park Brake Motor Low Reference	(29) 29	(29) 2.5	(29) GY / BK	(29) 4369	(29) III	(29) —
30	—	—	—	—	—	Not Occupied	30	—	—	—	—	—
(31) 31	(31) 0.5	(31) BN / BU	(31) 1602	(31) I	(31) —	(31) Front Brake Pad Wear Sensor Signal	(31) 31	(31) 0.5	(31) BN / BU	(31) 1602	(31) IV	(31) —
(32) 32	(32) 0.5	(32) BK / WH	(32) 2051	(32) I	(32) —	(32) Signal Ground	(32) 32	(32) 0.5	(32) BK / WH	(32) 2051	(32) IV	(32) —
(33) 33	(33) 0.5	(33) YE	(33) 872	(33) I	(33) —	(33) Right Front Wheel Speed Sensor Signal	(33) 33	(33) 0.5	(33) YE	(33) 872	(33) IV	(33) —
(34) 34	(34) 0.5	(34) GY / BN	(34) 7065	(34) I	(34) —	(34) Right Front Wheel Speed Sensor Control	(34) 34	(34) 0.5	(34) GY / BN	(34) 7065	(34) IV	(34) —
(35) 35	(35) 0.5	(35) GY	(35) 830	(35) I	(35) —	(35) Left Front Wheel Speed Sensor Signal	(35) 35	(35) 0.5	(35) GY	(35) 830	(35) IV	(35) —
(36) 36	(36) 0.5	(36) GY / WH	(36) 7064	(36) I	(36) —	(36) Left Front Wheel Speed Sensor Control	(36) 36	(36) 0.5	(36) GY / WH	(36) 7064	(36) IV	(36) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(37) 37	(37) 0.5	(37) V T	(37) 88 2	(37) I	(37) —	(37) Right Rear Wheel Speed Sensor Signal	(37) 37	(37) 0.5	(37) V T	(37) 88 2	(37) IV	(37) —
(38) 38	(38) 0.5	(38) G Y / YE	(38) 71 28	(38) I	(38) —	(38) Right Rear Wheel Speed Sensor Control	(38) 38	(38) 0.5	(38) G Y / YE	(38) 71 28	(38) IV	(38) —
(39) 39	(39) 0.5	(39) B U	(39) 88 4	(39) I	(39) —	(39) Left Rear Wheel Speed Sensor Signal	(39) 39	(39) 0.5	(39) B U	(39) 88 4	(39) IV	(39) —
(40) 40	(40) 0.5	(40) G Y / BK	(40) 71 27	(40) I	(40) —	(40) Left Rear Wheel Speed Sensor Control	(40) 40	(40) 0.5	(40) G Y / BK	(40) 71 27	(40) IV	(40) —
41 - 42	—	—	—	—	—	Not Occupied	41 - 42	—	—	—	—	—
(43) 43	(43) 6	(43) G N / VT	(43) 19 88	(43) II	(43) —	(43) Right Park Brake Motor Apply Control	(43) 43	(43) 2.5	(43) G N / VT	(43) 19 88	(43) III	(43) —
(44) 44	(44) 0.75	(44) B K	(44) 1	(44) I	(44) —	(44) Unfused Battery Positive Voltage	(44) 44	(44) 0.75	(44) B K	(44) 22 03	(44) IV	(44) —
(45) 45	(45) 0.5	(45) G N / YE	(45) 16 16	(45) I	(45) —	(45) Rear Brake Pad Wear Sensor Signal	(45) 45	(45) 0.5	(45) G N / YE	(45) 16 16	(45) IV	(45) —
(46) 46	(46) 0.5	(46) Y E	(46) 23 75	(46) I	(46) —	(46) Left Rear Outer Parking Assist Sensor Signal	(46) 46	(46) 0.5	(46) Y E	(46) 23 75	(46) IV	(46) —
(47) 47	(47) 0.75	(47) B N / WH	(47) 23 74	(47) I	(47) —	(47) Object Sensor Voltage Reference	(47) 47	(47) 0.75	(47) B N / WH	(47) 23 74	(47) IV	(47) —
(48) 48	(48) 0.5	(48) Y E / BU	(48) 23 76	(48) I	(48) —	(48) Left Rear Middle Parking Assist Sensor Signal	(48) 48	(48) 0.5	(48) Y E / BU	(48) 23 76	(48) IV	(48) —
(49) 49	(49) 0.5	(49) Y E / VT	(49) 23 78	(49) I	(49) —	(49) Right Rear Outer Parking Assist Sensor Signal	(49) 49	(49) 0.5	(49) Y E / VT	(49) 23 78	(49) IV	(49) —
(50) 50	(50) 0.75	(50) B K / GY	(50) 23 79	(50) I	(50) —	(50) Object Sensor Low Reference	(50) 50	(50) 0.75	(50) B K / GY	(50) 23 79	(50) IV	(50) —
(51) 51	(51) 0.5	(51) Y E / WH	(51) 23 77	(51) I	(51) —	(51) Right Rear Middle Parking Assist Sensor Signal	(51) 51	(51) 0.5	(51) Y E / WH	(51) 23 77	(51) IV	(51) —
52 - 53	—	—	—	—	—	Not Occupied	52 - 53	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(54) 54	(54) 0.75	(54) BK	(54) 1	(54) I	(54) —	(54) Unfused Battery Positive Voltage	(54) 54	(54) 0.75	(54) BK	(54) 2203	(54) IV	(54) —
(55) 55	(55) 6	(55) WH	(55) 2001	(55) II	(55) —	(55) Left Park Brake Motor Apply Control	(55) 55	(55) 2.5	(55) WH	(55) 2001	(55) III	(55) —

X101 Body Wiring Harness to Chassis Wiring Harness



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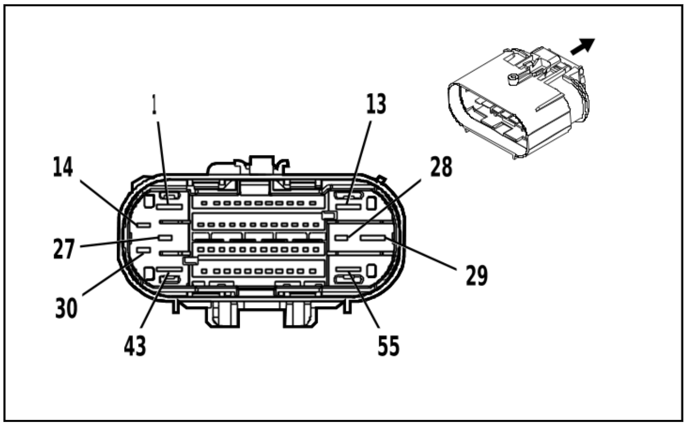


4993301

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35016652
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35205173
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332901	J-35616-35 (VT)	J-38125-212
II	19370818	J-35616-12 (BU)	J-38125-553
III	19371217	J-35616-12 (BU)	J-38125-553
IV	84867140	J-35616-13 (BU)	J-38125-553
V	84992391	J-35616-5 (PU)	J-38125-36

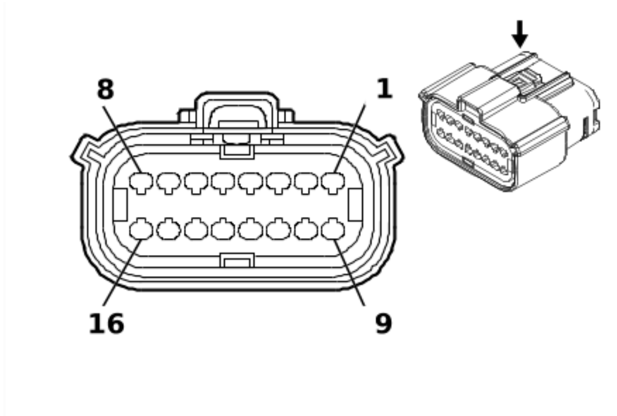
X101 Body Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 1	(2) BK	(2) 1	(2) III	(2) —	(2) Unfused Battery Positive Voltage	(2) 2	(2) 0.75	(2) BK	(2) 2	(2) IV	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 7122	(3) II	(3) —	(3) Axle Differential Lock Switch Signal	(3) 3	(3) 0.5	(3) YE / GN	(3) 7122	(3) IV	(3) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(4) 4	(4) 0.5	(4) YE	(4) 7115	(4) II	(4) —	(4) Rear Axle Differential Lock Indicator Control	(4) 4	(4) 0.5	(4) YE	(4) 7115	(4) IV	(4) —
(5) 5	(5) 0.5	(5) VT / GY	(5) 7117	(5) II	(5) —	(5) Front Axle Differential Lock Indicator Control	(5) 5	(5) 0.5	(5) VT / GY	(5) 7117	(5) IV	(5) —
6 - 8	—	—	—	—	—	Not Occupied	6 - 8	—	—	—	—	—
(9) 9	(9) 0.5	(9) GY / YE	(9) 7542	(9) II	(9) —	(9) Left Rear Stop Lamp Control	(9) 9	(9) 0.5	(9) GY / YE	(9) 7542	(9) IV	(9) —
(10) 10	(10) 0.5	(10) WH / YE	(10) 7541	(10) II	(10) —	(10) Right Rear Stop Lamp Control	(10) 10	(10) 0.5	(10) WH / YE	(10) 7541	(10) IV	(10) —
(11) 11	(11) 0.5	(11) BK	(11) 2250	(11) II	(11) —	(11) Ground	(11) 11	(11) 0.5	(11) BK	(11) 2250	(11) IV	(11) —
(12) 12	(12) 1	(12) BK	(12) 1	(12) III	(12) —	(12) Unfused Battery Positive Voltage	(12) 12	(12) 0.75	(12) BK	(12) 3	(12) IV	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—
(14) 14	(14) 2.5	(14) BU	(14) 47	(14) I	(14) —	(14) Trailer Auxiliary Control	(14) 14	(14) 2.5	(14) BU	(14) 47	(14) V	(14) —
(15) 15	(15) 0.5	(15) GN / BN	(15) 2266	(15) II	(15) —	(15) DC/AC Inverter Control 2	(15) 15	(15) 0.5	(15) GN / BN	(15) 2266	(15) IV	(15) —
(16) 16	(16) 0.5	(16) VT / RD	(16) 4049	(16) II	(16) —	(16) AC Power Outlet Sensor High Reference	(16) 16	(16) 0.5	(16) VT / RD	(16) 4049	(16) IV	(16) —
17 - 19	—	—	—	—	—	Not Occupied	17 - 19	—	—	—	—	—
(20) 20	(20) 0.5	(20) GN / BU	(20) 2733	(20) II	(20) —	(20) Brake System Control Module LIN Bus 2	(20) 20	(20) 0.5	(20) GN / BU	(20) 2733	(20) IV	(20) —
(21) 21	(21) 0.35	(21) BN / YE	(21) 820	(21) II	(21) —	(21) Center High Mounted Stop Lamp Supply Voltage	(21) 21	(21) 0.5	(21) BN / YE	(21) 820	(21) IV	(21) —
22	—	—	—	—	—	Not Occupied	22	—	—	—	—	—
(23) 23	(23) 0.5	(23) VT / BK	(23) 739	(23) II	(23) —	(23) Run/Crank Ignition 1 Voltage	(23) 23	(23) 0.5	(23) VT / BK	(23) 739	(23) IV	(23) —
(24) 24	(24) 0.5	(24) YE / BK	(24) 2224	(24) II	(24) —	(24) Trailer Brake Enable Signal	(24) 24	(24) 0.5	(24) YE / BK	(24) 2224	(24) IV	(24) —
(25) 25	(25) 0.5	(25) WH / BK	(25) 2223	(25) II	(25) —	(25) Trailer Brake Apply Signal	(25) 25	(25) 0.5	(25) WH / BK	(25) 2223	(25) IV	(25) —
(26) 26	(26) 0.5	(26) GN / WH	(26) 24	(26) II	(26) —	(26) Backup Lamp Control	(26) 26	(26) 0.75	(26) GN / WH	(26) 24	(26) IV	(26) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
27 - 32	—	—	—	—	—	Not Occupied	27 - 32	—	—	—	—	—
(33) 33	(33) 0.5	(33) BU / YE	(33) 4979	(33) II	(33) —	(33) AUTOSAR CAN Bus [+] 2 Serial Data	(33) 33	(33) 0.5	(33) BU / YE	(33) 4979	(33) IV	(33) —
(34) 34	(34) 0.5	(34) WH	(34) 4978	(34) II	(34) —	(34) AUTOSAR CAN Bus [-] 2 Serial Data	(34) 34	(34) 0.5	(34) WH	(34) 4978	(34) IV	(34) —
35	—	—	—	—	—	Not Occupied	35	—	—	—	—	—
(36) 36	(36) 0.5	(36) BU / YE	(36) 4979	(36) II	(36) —	(36) AUTOSAR CAN Bus [+] 2 Serial Data	(36) 36	(36) 0.5	(36) BU / YE	(36) 4979	(36) IV	(36) —
(37) 37	(37) 0.5	(37) WH	(37) 4978	(37) II	(37) —	(37) AUTOSAR CAN Bus [-] 2 Serial Data	(37) 37	(37) 0.5	(37) WH	(37) 4978	(37) IV	(37) —
38	—	—	—	—	—	Not Occupied	38	—	—	—	—	—
(39) 39	(39) 0.5	(39) BU / VT	(39) 4101	(39) II	(39) —	(39) AUTOSAR CAN Bus [+] 4 Serial Data	(39) 39	(39) 0.5	(39) BU / VT	(39) 4101	(39) IV	(39) —
(40) 40	(40) 0.5	(40) WH	(40) 4100	(40) II	(40) —	(40) AUTOSAR CAN Bus [-] 4 Serial Data	(40) 40	(40) 0.5	(40) WH	(40) 4100	(40) IV	(40) —
41 - 43	—	—	—	—	—	Not Occupied	41 - 43	—	—	—	—	—
(44) 44	(44) 1	(44) BK	(44) 2	(44) III	(44) —	(44) Battery Positive Voltage	(44) 44	(44) 0.75	(44) BK	(44) 4	(44) IV	(44) —
45 - 48	—	—	—	—	—	Not Occupied	45 - 48	—	—	—	—	—
(49) 49	(49) 0.5	(49) WH	(49) 4055	(49) II	(49) —	(49) Private Serial Data Powertrain CAN Bus [+] Serial Data	(49) 49	(49) 0.5	(49) WH	(49) 4055	(49) IV	(49) —
(50) 50	(50) 0.5	(50) BU / GY	(50) 4054	(50) II	(50) —	(50) Private Serial Data Powertrain CAN Bus [-] Serial Data	(50) 50	(50) 0.5	(50) BU / GY	(50) 4054	(50) IV	(50) —
51	—	—	—	—	—	Not Occupied	51	—	—	—	—	—
(52) 52	(52) 0.5	(52) BU / BK	(52) 4977	(52) II	(52) —	(52) AUTOSAR CAN Bus [+] 3 Serial Data	(52) 52	(52) 0.5	(52) BU / BK	(52) 4977	(52) IV	(52) —
(53) 53	(53) 0.5	(53) WH	(53) 4976	(53) II	(53) —	(53) AUTOSAR CAN Bus [-] 3 Serial Data	(53) 53	(53) 0.5	(53) WH	(53) 4976	(53) IV	(53) —
(54) 54	(54) 1	(54) BK	(54) 2	(54) III	(54) —	(54) Battery Positive Voltage	(54) 54	(54) 0.75	(54) BK	(54) 1	(54) IV	(54) —
55	—	—	—	—	—	Not Occupied	55	—	—	—	—	—

X107 Chassis Wiring Harness to Power Steering Wiring Harness



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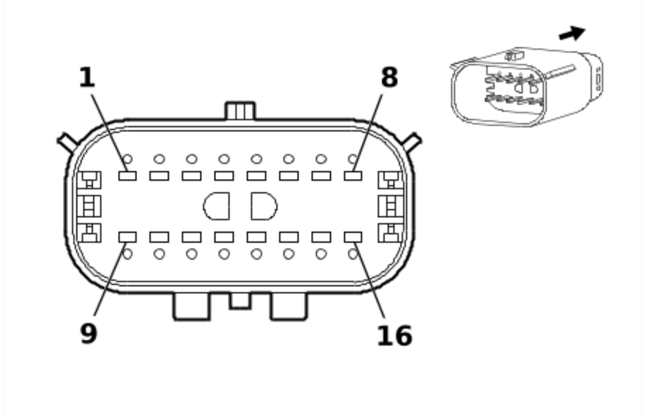


2548390

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-1606
- Service Connector: 13584788
- Description: 16-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 33482-8601
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

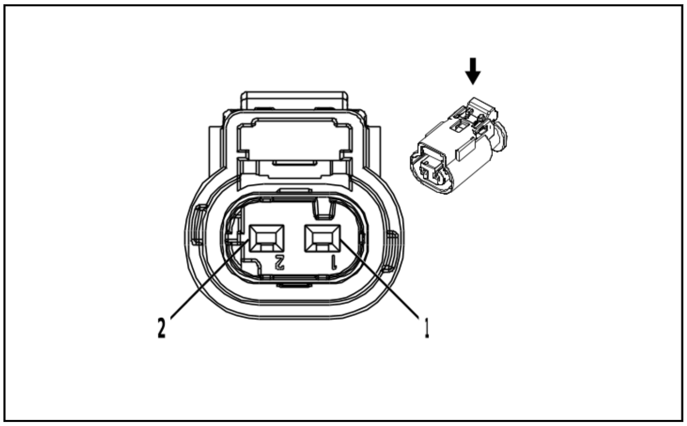
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X107 Chassis Wiring Harness to Power Steering Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 4979	(1) I	(1) —	(1) AUTOSAR CAN Bus [+] 2 Serial Data	(1) 1	(1) 0.5	(1) BU / YE	(1) 4979	(1) II	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4978	(2) I	(2) —	(2) AUTOSAR CAN Bus [-] 2 Serial Data	(2) 2	(2) 0.5	(2) WH	(2) 4978	(2) II	(2) —
3 - 4	—	—	—	—	—	Not Occupied	3 - 4	—	—	—	—	—
(5) 5	(5) 0.5	(5) BU / YE	(5) 4979	(5) I	(5) —	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) 5	(5) 0.5	(5) BU / YE	(5) 4979	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH	(6) 4978	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) 6	(6) 0.5	(6) WH	(6) 4978	(6) II	(6) —
7 - 8	—	—	—	—	—	Not Occupied	7 - 8	—	—	—	—	—
(9) 9	(9) 0.75	(9) VT / WH	(9) 7256	(9) I	(9) —	(9) Front Differential Lock Actuator Control	(9) 9	(9) 0.75	(9) VT / WH	(9) 7256	(9) II	(9) —
(10) 10	(10) 0.75	(10) WH / BK	(10) 7254	(10) I	(10) —	(10) Front Differential Lock Actuator Low Control	(10) 10	(10) 0.75	(10) WH / BK	(10) 7254	(10) II	(10) —
11 - 12	—	—	—	—	—	Not Occupied	11 - 12	—	—	—	—	—

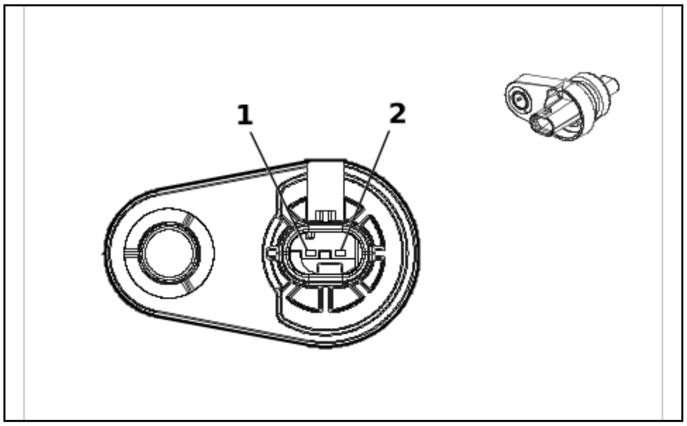
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(13) 13	(13) 0.5	(13) YE / WH	(13) 1695	(13) I	(13) —	(13) 4WD Locked Range Indicator Control	(13) 13	(13) 0.5	(13) YE / WH	(13) 1695	(13) II	(13) —
(14) 14	(14) 0.5	(14) GY / BK	(14) 1570	(14) I	(14) —	(14) Front Axle Actuator Control	(14) 14	(14) 0.5	(14) GY / BK	(14) 1570	(14) II	(14) —
(15) 15	(15) 0.5	(15) BK	(15) 2250	(15) I	(15) —	(15) Ground	(15) 15	(15) 0.5	(15) BK	(15) 2250	(15) II	(15) —
(16) 16	(16) 0.5	(16) GN	(16) 8016	(16) I	(16) —	(16) Secondary Axle Motor Control	(16) 16	(16) 0.5	(16) GN	(16) 8016	(16) II	(16) —

X144 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)



6472905

Connector Part Information
- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 12698857
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 Multilock Series, Sealed(BK)

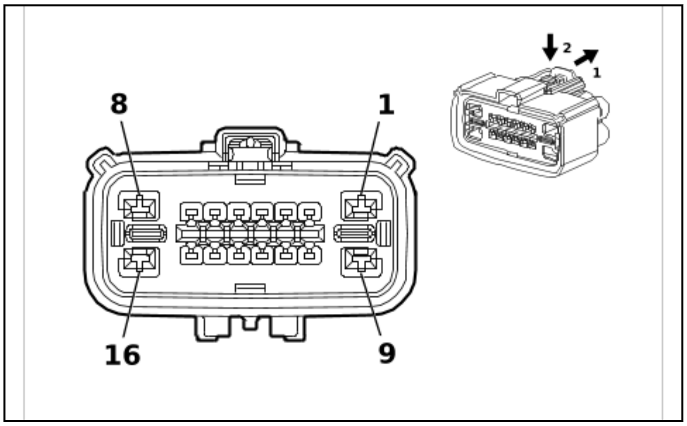
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X144 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) I	(1) —	(1) Oil Pump Motor Control	(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) I	(2) —	(2) Engine Oil Pump Control	(2) 2	(2) 0.5	(2) BU	(2) 179	(2) II	(2) —

X150 Body Wiring Harness to Forward Lamp Wiring Harness



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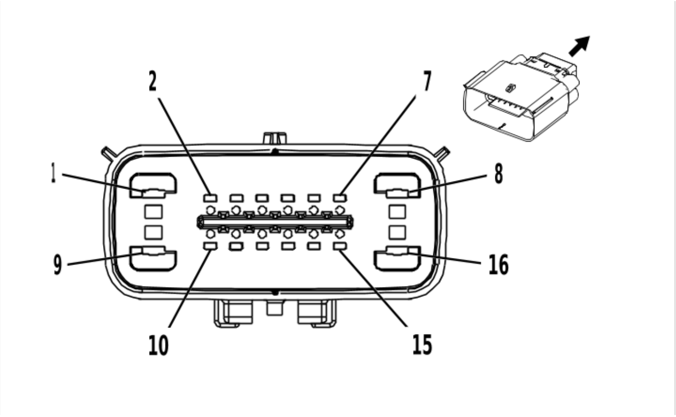


2373686

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 34985-8270
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 34986-1601
- Service Connector: 19331031
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(BK)

Terminal Part Information

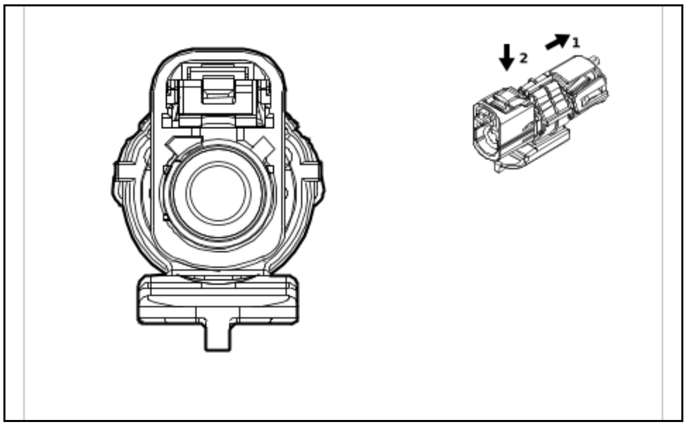
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13576377	J-35616-35 (VT)	J-38125-12A
II	85528055	J-35616-2A (GY)	J-38125-217
III	19366658	J-35616-5 (PU)	J-38125-12A
IV	86800300	J-35616-3 (GY)	J-38125-217

X150 Body Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / WH	(1) 640	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.75	(1) RD / WH	(1) 640	(1) III	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 712	(2) II	(2) —	(2) Left Headlamp Low Beam Control	(2) 2	(2) 0.5	(2) YE	(2) 712	(2) IV	(2) —
(3) 3	(3) 0.75	(3) WH	(3) 711	(3) II	(3) —	(3) Left Headlamp High Beam Control	(3) 3	(3) 0.5	(3) WH	(3) 711	(3) IV	(3) —
(4) 4	(4) 0.35	(4) WH / YE	(4) 1254	(4) II	(4) —	(4) Left Front Park Lamp Control	(4) 4	(4) 0.5	(4) WH / YE	(4) 1254	(4) IV	(4) —
(5) 5	(5) 0.5	(5) WH / YE	(5) 1204	(5) II	(5) —	(5) Left Park Lamp Control 2	(5) 5	(5) —	(5) —	(5) —	(5) —	(5) —
6 - 8	—	—	—	—	—	Not Occupied	6 - 8	—	—	—	—	—
(9) 9	(9) 2.5	(9) BK	(9) 150	(9) I	(9) —	(9) Ground	(9) 9	(9) 2.5	(9) BK	(9) 150	(9) III	(9) —
(10) 10	(10) 0.5	(10) GY / BU	(10) 7538	(10) II	(10) —	(10) Left Front DRL Control	(10) 10	(10) 0.5	(10) GY / BU	(10) 7538	(10) IV	(10) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(11) 11	(11) 0.5	(11) BU / WH	(11) 1314	(11) II	(11) —	(11) Left Front Turn Signal Lamp Control	(11) 11	(11) 0.5	(11) BU / WH	(11) 1314	(11) IV	(11) —
(12) 12	(12) 0.35	(12) VT / BK	(12) 6568	(12) II	(12) —	(12) Front Turn Signal Lamp Feedback Signal	(12) 12	(12) 0.5	(12) VT / BK	(12) 6568	(12) IV	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—
(14) 14	(14) 0.5	(14) OG / YE	(14) 354	(14) II	(14) —	(14) Left Front Impact Discriminating Sensor Signal	(14) 14	(14) 0.5	(14) OG / YE	(14) 354	(14) IV	(14) —
(15) 15	(15) 0.5	(15) BK / OG	(15) 5045	(15) II	(15) —	(15) Left Front Impact Discriminating Sensor Low Reference	(15) 15	(15) 0.5	(15) BK / OG	(15) 5045	(15) IV	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—

X156 Body Wiring Harness to Forward Lamp Wiring Harness



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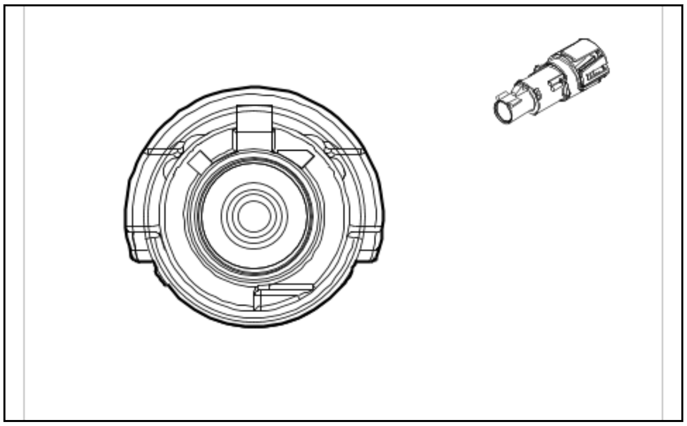


5518522

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13529796
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BK)

Connector Part Information
- Harness Type: Forward Lamp Wiring Harness COAX
- OEM Connector: 33355538
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

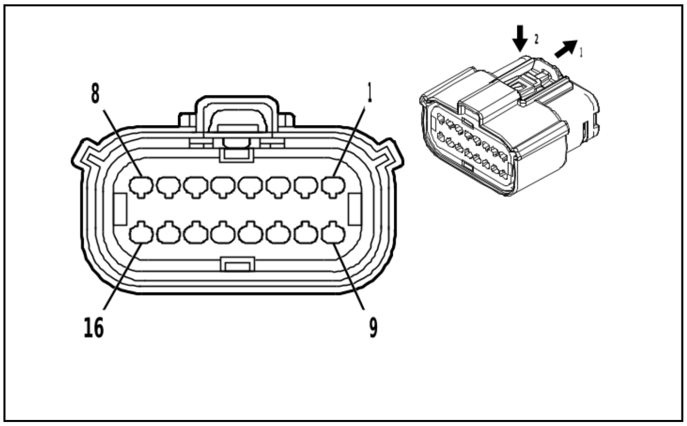
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X156 Body Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Front Vision Camera 1 Coaxial Video Signal	—	—	Coax Cable	—	I	—

X160 Engine Wiring Harness to Fuel Injector Wiring Harness



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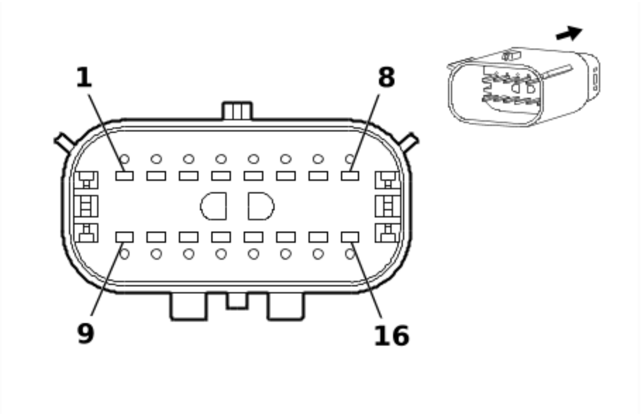


2548390

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1866
- Service Connector: 13584788
- Description: 16-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 33482-8641
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

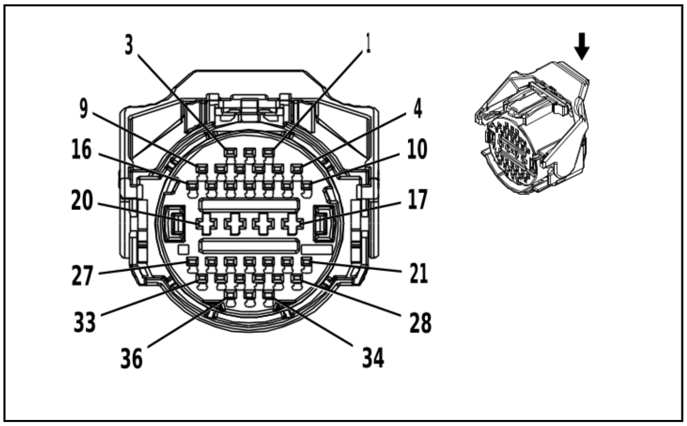
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X160 Engine Wiring Harness to Fuel Injector Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 496	(1) I	(1) —	(1) Knock Sensor 1 Signal	(1) 1	(1) 0.5	(1) VT / GY	(1) 496	(1) II	(1) —
(2) 2	(2) 0.75	(2) BN	(2) 4801	(2) I	(2) —	(2) Direct Fuel Injector High Voltage Control Cylinder 1	(2) 2	(2) 0.8	(2) BN	(2) 4801	(2) II	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) I	(3) —	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) II	(3) —
(4) 4	(4) 0.75	(4) GY / BU	(4) 4804	(4) I	(4) —	(4) Direct Fuel Injector High Voltage Control Cylinder 4	(4) 4	(4) 0.8	(4) GY / BU	(4) 4804	(4) II	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.75	(6) GN	(6) 4803	(6) I	(6) —	(6) Direct Fuel Injector High Voltage Control Cylinder 3	(6) 6	(6) 0.8	(6) GN	(6) 4803	(6) II	(6) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.75	(7) BU	(7) 4802	(7) I	(7) —	(7) Direct Fuel Injector High Voltage Control Cylinder 2	(7) 7	(7) 0.8	(7) BU	(7) 4802	(7) II	(7) —
(8) 8	(8) 0.5	(8) WH / GY	(8) 1876	(8) I	(8) —	(8) Knock Sensor 2 Signal	(8) 8	(8) 0.5	(8) WH / GY	(8) 1876	(8) II	(8) —
(9) 9	(9) 0.5	(9) BK / YE	(9) 1716	(9) I	(9) —	(9) Knock Sensor Low Reference 1	(9) 9	(9) 0.5	(9) BK / YE	(9) 1716	(9) II	(9) —
(10) 10	(10) 0.75	(10) BN / WH	(10) 4901	(10) I	(10) —	(10) Direct Fuel Injector High Voltage Supply Cylinder 1	(10) 10	(10) 0.8	(10) BN / WH	(10) 4901	(10) II	(10) —
(11) 11	(11) 0.5	(11) BU / WH	(11) 2918	(11) I	(11) —	(11) Fuel Rail Pressure Sensor Signal	(11) 11	(11) 0.5	(11) BU / WH	(11) 2918	(11) II	(11) —
(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) I	(12) —	(12) Engine Control Sensors Low Reference 2	(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) II	(12) —
(13) 13	(13) 0.75	(13) BU / WH	(13) 4904	(13) I	(13) —	(13) Direct Fuel Injector High Voltage Supply Cylinder 4	(13) 13	(13) 0.8	(13) BU / WH	(13) 4904	(13) II	(13) —
(14) 14	(14) 0.75	(14) GN / GY	(14) 4903	(14) I	(14) —	(14) Direct Fuel Injector High Voltage Supply Cylinder 3	(14) 14	(14) 0.8	(14) GN / GY	(14) 4903	(14) II	(14) —
(15) 15	(15) 0.75	(15) BU / GY	(15) 4902	(15) I	(15) —	(15) Direct Fuel Injector High Voltage Supply Cylinder 2	(15) 15	(15) 0.8	(15) BU / GY	(15) 4902	(15) II	(15) —
(16) 16	(16) 0.5	(16) BK / GY	(16) 2303	(16) I	(16) —	(16) Knock Sensor Low Reference 2	(16) 16	(16) 0.5	(16) BK / GY	(16) 2303	(16) II	(16) —

X175 Engine Wiring Harness to Automatic Transmission Wiring Harness



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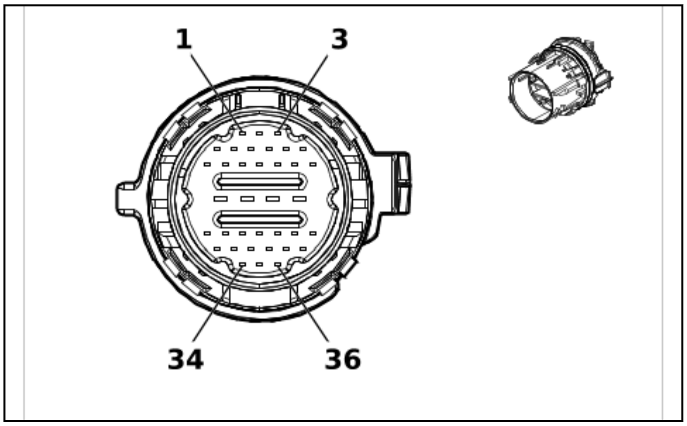


6493751

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2138314-9
- Service Connector: 19329922
- Description: 36-Way F 1.2 MCON-CB, 2.8 MCP Series, Sealed(BK)

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356151-9
- Service Connector: Service by Harness - See Part Catalog
- Description: 36-Way M 1.2 MCON-CB, 2.8 MCP Series, Sealed(NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575368	J-35616-35 (VT)	J-38125-556
II	19300445	J-35616-12 (BU)	J-38125-214
III	Not required	J-35616-17 (L-GN)	No Tool Required

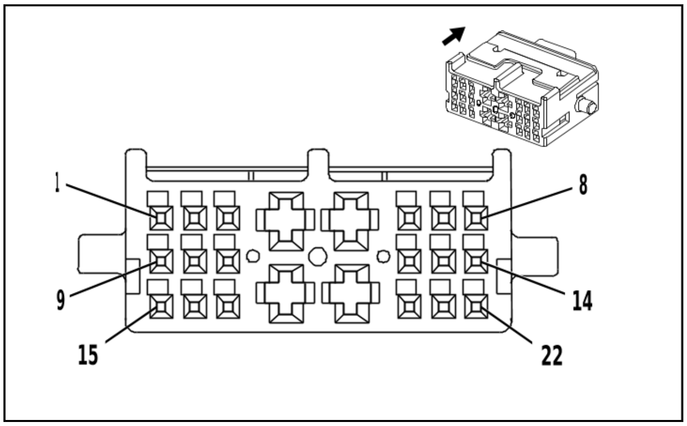
X175 Engine Wiring Harness to Automatic Transmission Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BN	(1) 6380	(1) II	(1) —	(1) Torque Converter Clutch Enable Solenoid Valve A Control	(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) III	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.5	(3) VT / WH	(3) 422	(3) II	(3) —	(3) Torque Converter Clutch Solenoid Valve Control	(3) 3	(3) 0.5	(3) YE / BN	(3) 422	(3) III	(3) —
(4) 4	(4) 0.5	(4) GN / BU	(4) 1530	(4) II	(4) —	(4) Transmission Line Pressure Control Solenoid Valve Control	(4) 4	(4) 0.5	(4) YE / BN	(4) 6404	(4) III	(4) —
(5) 5	(5) 0.5	(5) BN	(5) 6400	(5) II	(5) —	(5) Clutch Solenoid Valve A Control	(5) 5	(5) 0.5	(5) BN	(5) 6400	(5) III	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) BU	(6) 6401	(6) II	(6) —	(6) Clutch Solenoid Valve B Control	(6) 6	(6) 0.5	(6) BU	(6) 6401	(6) III	(6) —
(7) 7	(7) 0.5	(7) YE / BN	(7) 6210	(7) II	(7) —	(7) Torque Converter Clutch Enable Solenoid Valve B Control	(7) 7	(7) 0.5	(7) YE / BN	(7) 6210	(7) III	(7) —
(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) II	(8) —	(8) Transmission Auxiliary Fluid Pump Control	(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) III	(8) —
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) 0.5	(10) GY	(10) 6402	(10) II	(10) —	(10) Clutch Solenoid Valve C Control	(10) 10	(10) 0.5	(10) GY	(10) 6402	(10) III	(10) —
(11) 11	(11) 0.5	(11) BK / BN	(11) 586	(11) II	(11) —	(11) Transmission Fluid Temperature Sensor Low Reference	(11) 11	(11) 0.5	(11) BK / BN	(11) 586	(11) III	(11) —
(12) 12	(12) 0.5	(12) BN / WH	(12) 585	(12) II	(12) —	(12) Transmission Fluid Temperature Sensor Signal	(12) 12	(12) 0.5	(12) BN / WH	(12) 585	(12) III	(12) —
(13) 13	(13) 0.5	(13) WH	(13) 4508	(13) II	(13) —	(13) Transmission Clutch G Control	(13) 13	(13) 0.5	(13) WH	(13) 4508	(13) III	(13) —
(14) 14	(14) 0.5	(14) WH / BU	(14) 4507	(14) II	(14) —	(14) Transmission Clutch H Control	(14) 14	(14) 0.5	(14) WH / BU	(14) 4507	(14) III	(14) —
15 - 16	—	—	—	—	—	Not Occupied	15 - 16	—	—	—	—	—
(17) 17	(17) 1.5	(17) RD / BU	(17) 840	(17) I	(17) —	(17) Battery Positive Voltage	(17) 17	(17) 1.5	(17) RD / GN	(17) 40	(17) III	(17) —
(18) 18	(18) 0.75	(18) GN / GY	(18) 6387	(18) I	(18) —	(18) Transmission High Side Driver 1 Control	(18) 18	(18) 2.5	(18) GN / GY	(18) 6387	(18) III	(18) —
(19) 19	(19) 0.75	(19) GY / BN	(19) 6388	(19) I	(19) —	(19) Transmission High Side Driver 2 Control	(19) 19	(19) 2.5	(19) GY / BN	(19) 6388	(19) III	(19) —
(20) 20	(20) 1.5	(20) BK	(20) 6250	(20) I	(20) —	(20) Transmission Ground	(20) 20	(20) 1.5	(20) BK	(20) 6250	(20) III	(20) —
(21) 21	(21) 0.5	(21) GN / BK	(21) 3337	(21) II	(21) —	(21) Transmission Internal Mode Switch Mode Control Y	(21) 21	(21) 0.5	(21) GN / YE	(21) 3337	(21) III	(21) —
(22) 22	(22) 0.5	(22) BU / WH	(22) 3338	(22) II	(22) —	(22) Transmission Internal Mode Switch Mode Control X	(22) 22	(22) 0.5	(22) BU / WH	(22) 3338	(22) III	(22) —
23	—	—	—	—	—	Not Occupied	23	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(24) 24	(24) 0.5	(24) GY / BU	(24) 6358	(24) II	(24) —	(24) Output Speed Signal	(24) 24	(24) 0.5	(24) GY / BU	(24) 6358	(24) III	(24) —
(25) 25	(25) 0.5	(25) YE / GN	(25) 4170	(25) II	(25) —	(25) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(25) 25	(25) 0.5	(25) YE / GN	(25) 4170	(25) III	(25) —
(26) 26	(26) 0.5	(26) GN / RD	(26) 6353	(26) II	(26) —	(26) Input Speed Signal	(26) 26	(26) 0.5	(26) GN / YE	(26) 6353	(26) III	(26) —
(27) 27	(27) 0.5	(27) YE / BU	(27) 4171	(27) II	(27) —	(27) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(27) 27	(27) 0.5	(27) YE / BU	(27) 4171	(27) III	(27) —
28	—	—	—	—	—	Not Occupied	28	—	—	—	—	—
(29) 29	(29) 0.5	(29) WH / RD	(29) 480	(29) II	(29) —	(29) Engine Control Vehicle Sensors 5 Volt Reference 1	(29) 29	(29) 0.5	(29) WH / RD	(29) 480	(29) III	(29) —
(30) 30	(30) 0.5	(30) BK / GY	(30) 626	(30) II	(30) —	(30) Engine Control Vehicle Sensors Low Reference 1	(30) 30	(30) 0.5	(30) BK / GY	(30) 3927	(30) III	(30) —
31	—	—	—	—	—	Not Occupied	31	—	—	—	—	—
(32) 32	(32) 0.5	(32) GN / VT	(32) 4510	(32) II	(32) —	(32) Transmission Intermediate Speed Signal	(32) 32	(32) 0.5	(32) GN / VT	(32) 4510	(32) III	(32) —
33	—	—	—	—	—	Not Occupied	33	—	—	—	—	—
(34) 34	(34) 0.5	(34) GY / RD	(34) 10817	(34) II	(34) —	(34) Lubricant Circuit Pressure Sensor 5 Volt Reference	(34) 34	(34) 0.5	(34) GY / RD	(34) 10817	(34) III	(34) —
(35) 35	(35) 0.5	(35) BU / BK	(35) 10819	(35) II	(35) —	(35) Lubricant Circuit Pressure Sensor Low Reference	(35) 35	(35) 0.5	(35) BU / BK	(35) 10819	(35) III	(35) —
(36) 36	(36) 0.5	(36) GN / YE	(36) 10816	(36) II	(36) —	(36) Lubricant Circuit Pressure Sensor Signal	(36) 36	(36) 0.5	(36) GN / YE	(36) 10816	(36) III	(36) —

X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness



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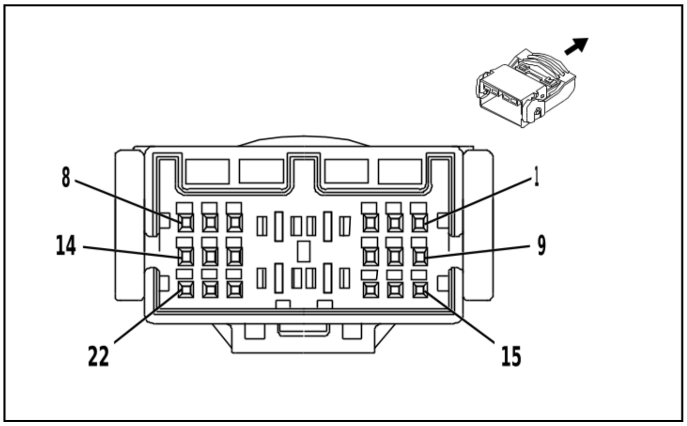


3977770

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897543-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way F 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897540-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way M 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required
III	Not required	J-35616-5 (PU)	No Tool Required
IV	Not required	J-35616-65B (L-BU)	No Tool Required

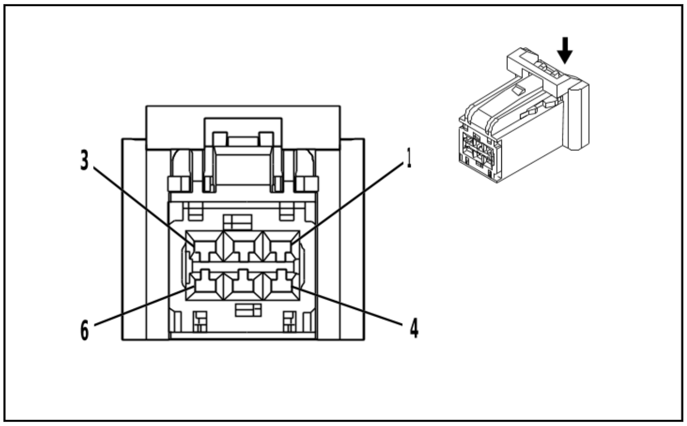
X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) II	(1) —	(1) Torque Converter Clutch Enable Solenoid Valve A Control	(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) IV	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 3338	(2) II	(2) —	(2) Transmission Internal Mode Switch Mode Control X	(2) 2	(2) 0.5	(2) BU / WH	(2) 3338	(2) IV	(2) —
(3) 3	(3) 0.5	(3) GY / RD	(3) 10817	(3) II	(3) —	(3) Lubricant Circuit Pressure Sensor 5 Volt Reference	(3) 3	(3) 0.5	(3) GY / RD	(3) 10817	(3) IV	(3) —
(4) 4	(4) 2.5	(4) GN / GY	(4) 6387	(4) I	(4) —	(4) Transmission High Side Driver 1 Control	(4) 4	(4) 2.5	(4) GN / GY	(4) 6387	(4) III	(4) —
(5) 5	(5) 1.5	(5) RD / GN	(5) 40	(5) I	(5) —	(5) Battery Positive Voltage	(5) 5	(5) 1.5	(5) RD / GN	(5) 40	(5) III	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) WH / RD	(6) 596	(6) II	(6) —	(6) 5V Reference	(6) 6	(6) 0.5	(6) WH / RD	(6) 596	(6) IV	(6) —
(7) 7	(7) 0.5	(7) WH / BU	(7) 4507	(7) II	(7) —	(7) Transmission Clutch H Control	(7) 7	(7) 0.5	(7) WH / BU	(7) 4507	(7) IV	(7) —
(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) II	(8) —	(8) Transmission Auxiliary Fluid Pump Control	(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) IV	(8) —
(9) 9	(9) 0.5	(9) WH	(9) 4508	(9) II	(9) —	(9) Transmission Clutch G Control	(9) 9	(9) 0.5	(9) WH	(9) 4508	(9) IV	(9) —
(10) 10	(10) 0.5	(10) YE / BN	(10) 6210	(10) II	(10) —	(10) Torque Converter Clutch Enable Solenoid Valve B Control	(10) 10	(10) 0.5	(10) YE / BN	(10) 6210	(10) IV	(10) —
(11) 11	(11) 0.5	(11) GN / YE	(11) 3337	(11) II	(11) —	(11) Transmission Internal Mode Switch Mode Control Y	(11) 11	(11) 0.5	(11) GN / YE	(11) 3337	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BU / BK	(12) 10819	(12) II	(12) —	(12) Lubricant Circuit Pressure Sensor Low Reference	(12) 12	(12) 0.5	(12) BU / BK	(12) 10819	(12) IV	(12) —
(13) 13	(13) 0.5	(13) GY	(13) 6402	(13) II	(13) —	(13) Clutch Solenoid Valve C Control	(13) 13	(13) 0.5	(13) GY	(13) 6402	(13) IV	(13) —
(14) 14	(14) 0.5	(14) YE / BN	(14) 6404	(14) II	(14) —	(14) Clutch Solenoid Valve E Control	(14) 14	(14) 0.5	(14) YE / BN	(14) 6404	(14) IV	(14) —
(15) 15	(15) 0.5	(15) BN / WH	(15) 585	(15) II	(15) —	(15) Transmission Fluid Temperature Sensor Signal	(15) 15	(15) 0.5	(15) BK / BN	(15) 585	(15) IV	(15) —
(16) 16	(16) 0.5	(16) BK / BN	(16) 586	(16) II	(16) —	(16) Transmission Fluid Temperature Sensor Low Reference	(16) 16	(16) 0.5	(16) BK / BN	(16) 586	(16) IV	(16) —
(17) 17	(17) 0.5	(17) GN / YE	(17) 10816	(17) II	(17) —	(17) Lubricant Circuit Pressure Sensor Signal	(17) 17	(17) 0.5	(17) GN / YE	(17) 10816	(17) IV	(17) —
(18) 18	(18) 2.5	(18) GY / BN	(18) 6388	(18) I	(18) —	(18) Transmission High Side Driver 2 Control	(18) 18	(18) 2.5	(18) GY / BN	(18) 6388	(18) III	(18) —
(19) 19	(19) 1.5	(19) BK	(19) 6250	(19) I	(19) —	(19) Transmission Ground	(19) 19	(19) 1.5	(19) BK	(19) 6250	(19) III	(19) —
(20) 20	(20) 0.5	(20) BK / GY	(20) 3927	(20) II	(20) —	(20) Transmission Internal Mode Switch Feedback Signal	(20) 20	(20) 0.5	(20) BK / GY	(20) 3927	(20) IV	(20) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(21) 21	(21) 0.5	(21) BN	(21) 6400	(21) II	(21) —	(21) Clutch Solenoid Valve A Control	(21) 21	(21) 0.5	(21) BN	(21) 6400	(21) IV	(21) —
(22) 22	(22) 0.5	(22) BU	(22) 6401	(22) II	(22) —	(22) Clutch Solenoid Valve B Control	(22) 22	(22) 0.5	(22) BU	(22) 6401	(22) IV	(22) —

X177 Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness



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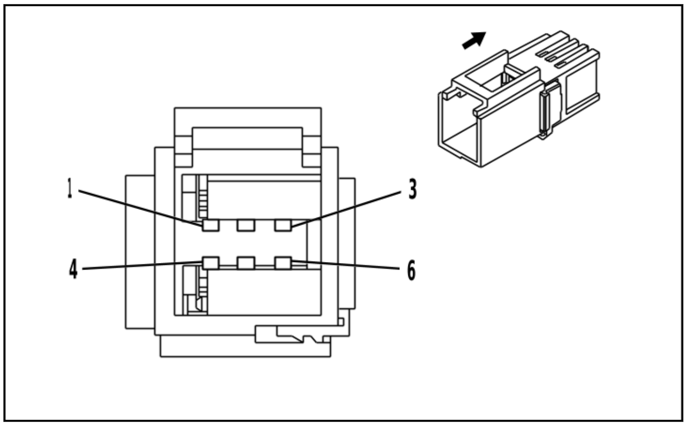


3977959

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 33134940
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 OCS Series(NA)

Connector Part Information

- Harness Type: Automatic Transmission Output Speed Sensor Wiring Harness
- OEM Connector: 13955963
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 0.64 II Series(GY)

Terminal Part Information

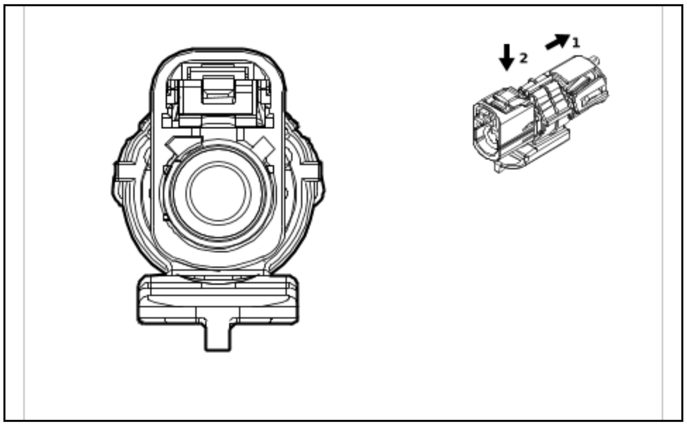
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-65B (L-BU)	No Tool Required

X177 Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 6358	(1) I	(1) —	(1) Output Speed Signal	(1) 1	(1) 0	(1) GY / BU	(1) 6358	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / GN	(2) 4170	(2) I	(2) —	(2) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(2) 2	(2) 0	(2) RD	(2) 4170	(2) II	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) YE / GN	(3) 4170	(3) I	(3) —	(3) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(3) 3	(3) 0	(3) YE / GN	(3) 4170	(3) II	(3) —
(4) 4	(4) 0.5	(4) YE / BU	(4) 4171	(4) I	(4) —	(4) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(4) 4	(4) 0	(4) YE / BU	(4) 4171	(4) II	(4) —
(5) 5	(5) 0.5	(5) GN / YE	(5) 6353	(5) I	(5) —	(5) Input Speed Signal	(5) 5	(5) 0	(5) GN / YE	(5) 6353	(5) II	(5) —
(6) 6	(6) 0.5	(6) GN / VT	(6) 4510	(6) I	(6) —	(6) Transmission Intermediate Speed Signal	(6) 6	(6) 0	(6) GN	(6) 4510	(6) II	(6) —

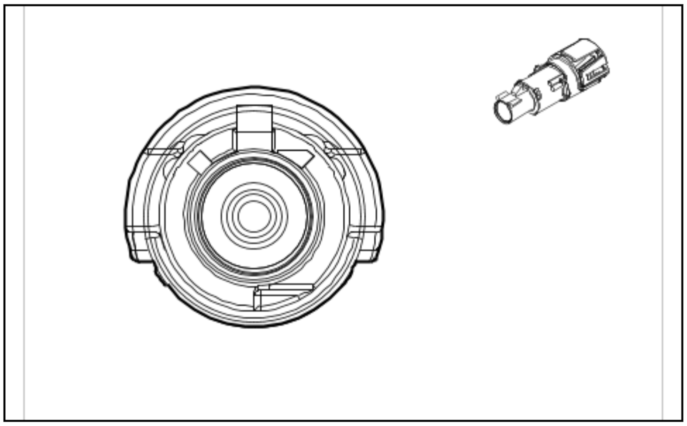
X195 Forward Lamp Wiring Harness to Front View Camera Switch Wiring Harness



5519150

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness COAX
- OEM Connector: 13529796
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BK)



5518522

Connector Part Information

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 33355538
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

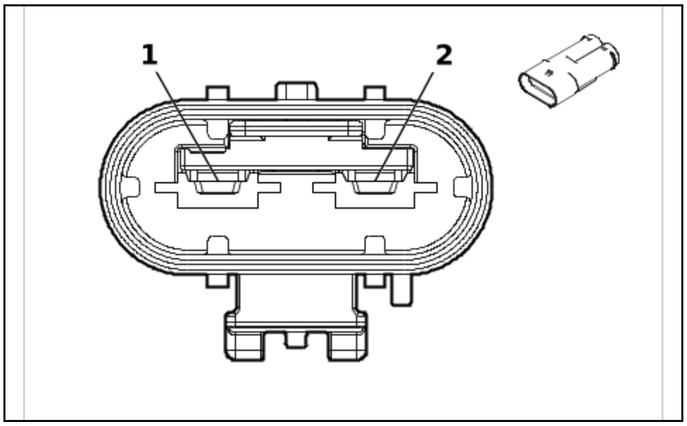
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X195 Forward Lamp Wiring Harness to Front View Camera Switch Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Front Vision Camera 1 Coaxial Video Signal	—	—	Coax Cable	—	I	—

X198 Power Steering Wiring Harness to Battery Negative Cable Extension Cable



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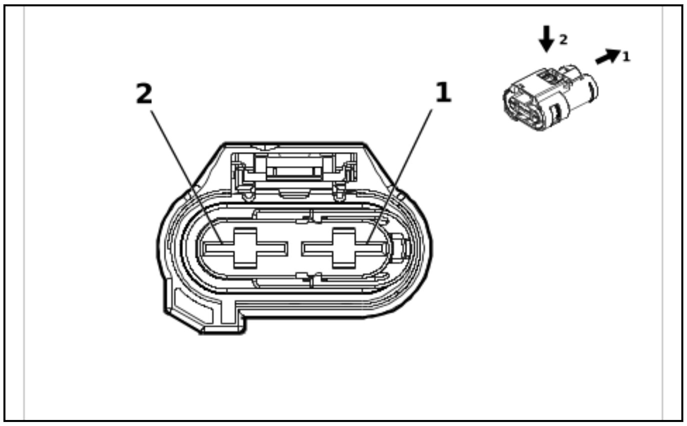


3608474

Connector Part Information
- Harness Type: Power Steering Wiring Harness
- OEM Connector: 13544729
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 12 MAS Series(BK)

Connector Part Information
- Harness Type: Battery Negative Cable Extension Cable
- OEM Connector: 13533168
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 12 MAK Series, Sealed(BK)

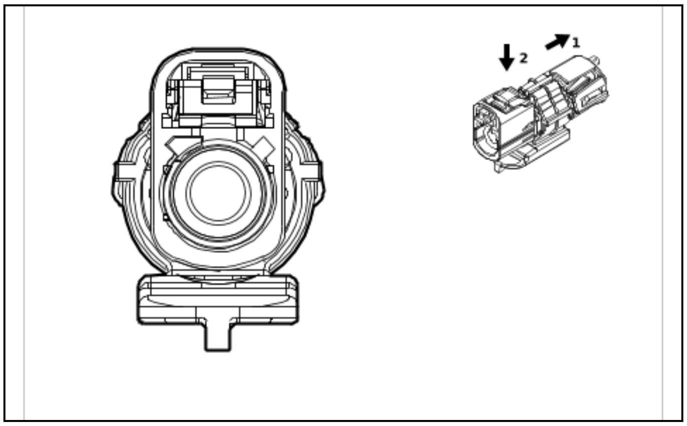
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	No Tool Required	No Tool Required

X198 Power Steering Wiring Harness to Battery Negative Cable Extension Cable

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 16	(1) RD / VT	(1) 542	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 20	(1) RD / VT	(1) 542	(1) II	(1) —
(2) 2	(2) 16	(2) BK	(2) 250	(2) I	(2) —	(2) Ground	(2) 2	(2) 20	(2) BK	(2) 250	(2) II	(2) —

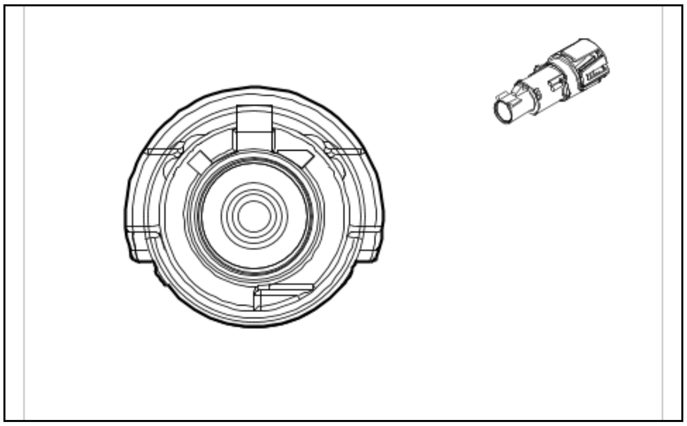
X199 Chassis Wiring Harness to Body Wiring Harness



5519150

Connector Part Information

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35863344
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BK)



5518522

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516806
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BK)

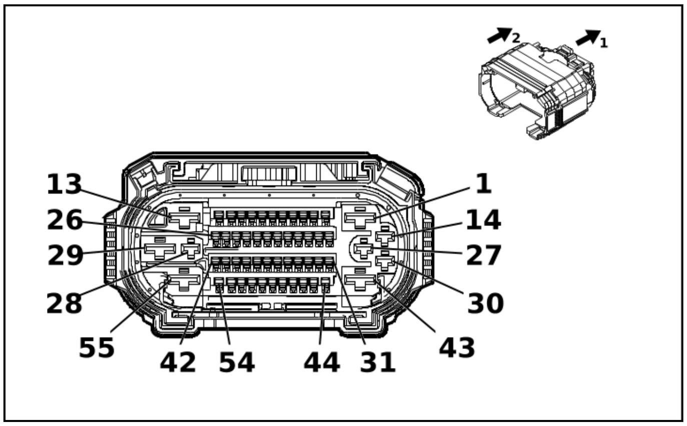
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X199 Chassis Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X201 Engine Wiring Harness to Body Wiring Harness



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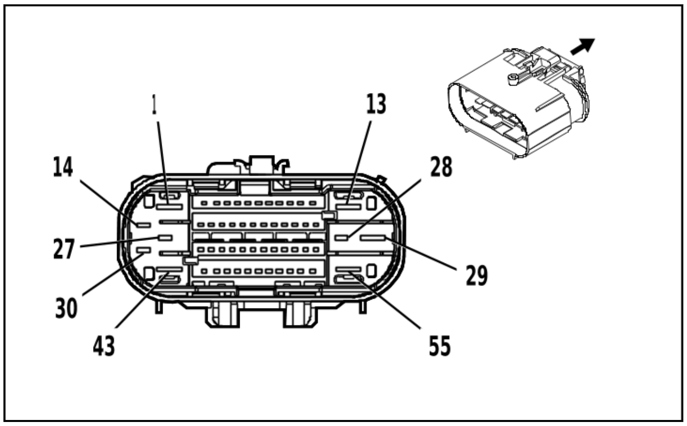


4994369

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35716589
- Service Connector: 19371184
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35716583
- Service Connector: 84727363
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332901	J-35616-35 (VT)	J-38125-212
II	19370818	J-35616-12 (BU)	J-38125-553
III	84867140	J-35616-13 (BU)	J-38125-553
IV	84992391	J-35616-5 (PU)	J-38125-36

X201 Engine Wiring Harness to Body Wiring Harness

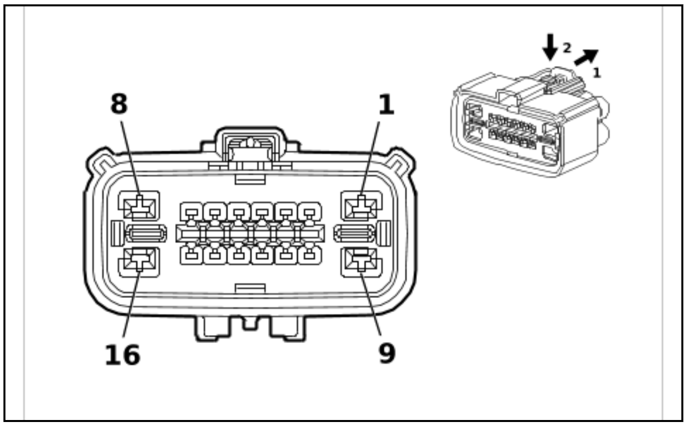
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 0.75	(2) BK	(2) 5133	(2) II	(2) —	(2) Left Rear Door Dead Lock Lock Signal	(2) 2	(2) 0.75	(2) BK	(2) 2201	(2) III	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.5	(4) GN / VT	(4) 4621	(4) II	(4) —	(4) Engine Control Module LIN Bus 1	(4) 4	(4) 0.5	(4) GN / VT	(4) 10806	(4) III	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4055	(5) II	(5) —	(5) Private Serial Data Powertrain CAN Bus [+] Serial Data	(5) 5	(5) 0.5	(5) WH	(5) 4055	(5) III	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4054	(6) II	(6) —	(6) Private Serial Data Powertrain CAN Bus [-] Serial Data	(6) 6	(6) 0.5	(6) BU / GY	(6) 4054	(6) III	(6) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) BU / BK	(7) 4977	(7) II	(7) —	(7) AUTOSAR CAN Bus [+] 3 Serial Data	(7) 7	(7) 0.5	(7) BU / BK	(7) 4977	(7) III	(7) —
(8) 8	(8) 0.5	(8) WH	(8) 4976	(8) II	(8) —	(8) AUTOSAR CAN Bus [-] 3 Serial Data	(8) 8	(8) 0.5	(8) WH	(8) 4976	(8) III	(8) —
9 - 11	—	—	—	—	—	Not Occupied	9 - 11	—	—	—	—	—
(12) 12	(12) 0.75	(12) BK	(12) 5133	(12) II	(12) —	(12) Left Rear Door Dead Lock Lock Signal	(12) 12	(12) 0.75	(12) BK	(12) 2201	(12) III	(12) —
13 - 14	—	—	—	—	—	Not Occupied	13 - 14	—	—	—	—	—
(15) 15	(15) 0.5	(15) WH / RD	(15) 480	(15) II	(15) —	(15) Engine Control Vehicle Sensors 5 Volt Reference 1	(15) 15	(15) 0.5	(15) WH / RD	(15) 480	(15) III	(15) —
(16) 16	(16) 0.5	(16) WH / GN	(16) 5380	(16) II	(16) —	(16) Brake Position Sensor Signal	(16) 16	(16) 0.5	(16) WH / GN	(16) 5380	(16) III	(16) —
(17) 17	(17) 0.5	(17) BK / GY	(17) 626	(17) II	(17) —	(17) Engine Control Vehicle Sensors Low Reference 1	(17) 17	(17) 0.5	(17) BK / GY	(17) 626	(17) III	(17) —
(18) 18	(18) 0.5	(18) BK / GY	(18) 626	(18) II	(18) —	(18) Engine Control Vehicle Sensors Low Reference 1	(18) 18	(18) 0.5	(18) BK / GY	(18) 626	(18) III	(18) —
(19) 19	(19) 0.5	(19) BU / GY	(19) 636	(19) II	(19) —	(19) Ambient Air Temperature Sensor Signal	(19) 19	(19) 0.5	(19) BU / GY	(19) 636	(19) III	(19) —
(20) 20	(20) 0.5	(20) YE / BK	(20) 625	(20) II	(20) —	(20) Starter Enable Relay Control	(20) 20	(20) 0.5	(20) YE / BK	(20) 625	(20) III	(20) —
(21) 21	(21) 0.5	(21) VT / GN	(21) 4320	(21) II	(21) —	(21) Powertrain Sensor Bus Enable	(21) 21	(21) 0.5	(21) VT / GN	(21) 4320	(21) III	(21) —
(22) 22	(22) 0.5	(22) VT / BK	(22) 2139	(22) II	(22) —	(22) Run/ Crank Ignition 1 Voltage	(22) 22	(22) 0.5	(22) VT / BK	(22) 2139	(22) III	(22) —
23	—	—	—	—	—	Not Occupied	23	—	—	—	—	—
(24) 24	(24) 0.5	(24) WH / RD	(24) 1164	(24) II	(24) —	(24) Accelerator Pedal Position 5V Reference 1	(24) 24	(24) 0.5	(24) WH / RD	(24) 1164	(24) III	(24) —
(25) 25	(25) 0.5	(25) YE / WH	(25) 1161	(25) II	(25) —	(25) Accelerator Pedal Position Signal 1	(25) 25	(25) 0.5	(25) YE / WH	(25) 1161	(25) III	(25) —
(26) 26	(26) 0.5	(26) BK / BU	(26) 1271	(26) II	(26) —	(26) Accelerator Pedal Position Low Reference 1	(26) 26	(26) 0.5	(26) BK / BU	(26) 1271	(26) III	(26) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
27	—	—	—	—	—	Not Occupied	27	—	—	—	—	—
(28) 28	(28) 0.75	(28) RD / GN	(28) 1840	(28) I	(28) —	(28) Battery Positive Voltage	(28) 28	(28) 1.5	(28) RD / GN	(28) 1840	(28) IV	(28) —
29 - 31	—	—	—	—	—	Not Occupied	29 - 31	—	—	—	—	—
(32) 32	(32) 0.5	(32) BU / BN	(32) 7573	(32) II	(32) —	(32) Air Conditioning Compressor Solenoid Valve Control	(32) 32	(32) 0.5	(32) BU / BN	(32) 7573	(32) III	(32) —
(33) 33	(33) 0.5	(33) BU / YE	(33) 7574	(33) II	(33) —	(33) Air Conditioning Compressor Solenoid Valve Control	(33) 33	(33) 0.5	(33) BU / YE	(33) 7574	(33) III	(33) —
34	—	—	—	—	—	Not Occupied	34	—	—	—	—	—
(35) 35	(35) 0.5	(35) YE	(35) 4063	(35) II	(35) —	(35) Hood Status A Signal	(35) 35	(35) 0.5	(35) YE	(35) 4063	(35) III	(35) —
36	—	—	—	—	—	Not Occupied	36	—	—	—	—	—
(37) 37	(37) 0.5	(37) VT / GY	(37) 139	(37) II	(37) —	(37) Run/ Crank Ignition 1 Voltage	(37) 37	(37) 0.5	(37) VT / BK	(37) 739	(37) III	(37) —
38 - 39	—	—	—	—	—	Not Occupied	38 - 39	—	—	—	—	—
(40) 40	(40) 0.5	(40) BN / RD	(40) 1274	(40) II	(40) —	(40) Accelerator Pedal Position 5V Reference 2	(40) 40	(40) 0.5	(40) BN / RD	(40) 1274	(40) III	(40) —
(41) 41	(41) 0.5	(41) GN / WH	(41) 1162	(41) II	(41) —	(41) Accelerator Pedal Position Signal 2	(41) 41	(41) 0.5	(41) GN / WH	(41) 1162	(41) III	(41) —
(42) 42	(42) 0.5	(42) BK / VT	(42) 1272	(42) II	(42) —	(42) Accelerator Pedal Position Low Reference 2	(42) 42	(42) 0.5	(42) BK / VT	(42) 1272	(42) III	(42) —
43	—	—	—	—	—	Not Occupied	43	—	—	—	—	—
(44) 44	(44) 0.75	(44) BK	(44) 5133	(44) II	(44) —	(44) Left Rear Door Dead Lock Lock Signal	(44) 44	(44) 0.75	(44) BK	(44) 2204	(44) III	(44) —
45 - 46	—	—	—	—	—	Not Occupied	45 - 46	—	—	—	—	—
(47) 47	(47) 0.5	(47) BU / RD	(47) 460	(47) II	(47) —	(47) Engine Control Sensors 5 Volt Reference 1	(47) 47	(47) 0.5	(47) GY / RD	(47) 10667	(47) III	(47) —
(48) 48	(48) 0.5	(48) BK / YE	(48) 548	(48) II	(48) —	(48) Engine Control Sensors Low Reference 1	(48) 48	(48) 0.5	(48) BK / GN	(48) 580	(48) III	(48) —
(49) 49	(49) 0.5	(49) YE / WH	(49) 3200	(49) II	(49) —	(49) Throttle Inlet Absolute Pressure Sensor Signal	(49) 49	(49) 0.5	(49) YE / WH	(49) 3200	(49) III	(49) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
50 - 53	—	—	—	—	—	Not Occupied	50 - 53	—	—	—	—	—
(54) 54	(54) 0.75	(54) BK	(54) 5133	(54) II	(54) —	(54) Left Rear Door Dead Lock Lock Signal	(54) 54	(54) 0.75	(54) BK	(54) 2204	(54) III	(54) —
55	—	—	—	—	—	Not Occupied	55	—	—	—	—	—

X204 Engine Wiring Harness to Chassis Wiring Harness



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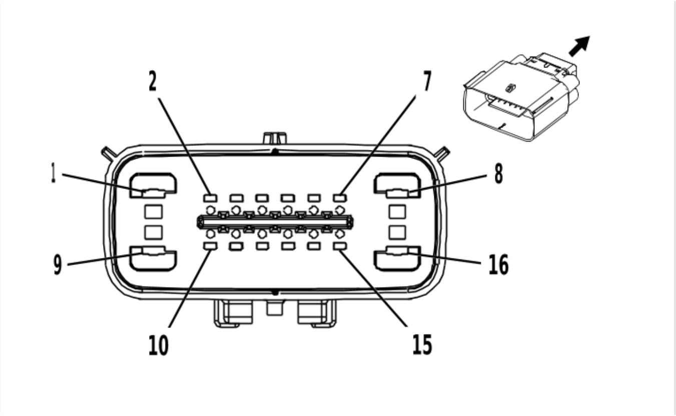


2373686

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34985-8270
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34986-8254
- Service Connector: 19331031
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(BK)

Terminal Part Information

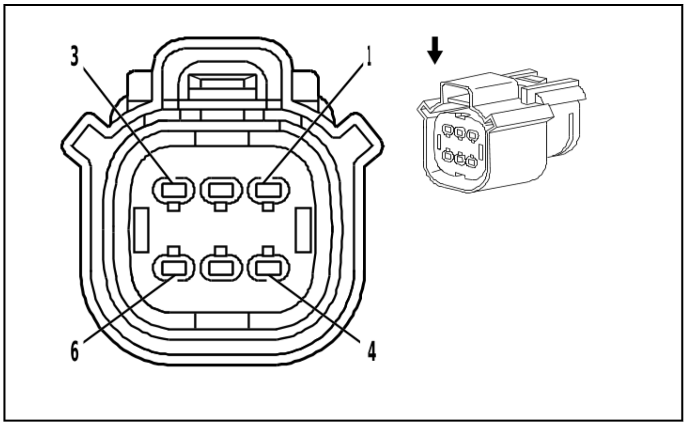
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13576377	J-35616-35 (VT)	J-38125-12A
II	85528055	J-35616-2A (GY)	J-38125-217
III	19366658	J-35616-5 (PU)	J-38125-12A
IV	86800300	J-35616-3 (GY)	J-38125-217

X204 Engine Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 3	(1) RD / WH	(1) 2242	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 3	(1) RD / WH	(1) 2242	(1) III	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.5	(3) GY / BK	(3) 1570	(3) II	(3) —	(3) Front Axle Actuator Control	(3) 3	(3) 0.5	(3) GY / BK	(3) 1570	(3) IV	(3) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(4) 4	(4) 0.5	(4) YE / WH	(4) 1695	(4) II	(4) —	(4) 4WD Locked Range Indicator Control	(4) 4	(4) 0.5	(4) YE / WH	(4) 1695	(4) IV	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.5	(6) VT / GN	(6) 4320	(6) II	(6) —	(6) Powertrain Sensor Bus Enable	(6) 6	(6) 0.5	(6) VT / GN	(6) 4320	(6) IV	(6) —
(7) 7	(7) 0.5	(7) GN / GY	(7) 465	(7) II	(7) —	(7) Fuel Pump Primary Relay Control	(7) 7	(7) 0.5	(7) GN / GY	(7) 465	(7) IV	(7) —
8 - 10	—	—	—	—	—	Not Occupied	8 - 10	—	—	—	—	—
(11) 11	(11) 0.5	(11) GN / VT	(11) 4621	(11) II	(11) —	(11) Engine Control Module LIN Bus 1	(11) 11	(11) 0.5	(11) GN / VT	(11) 10806	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BU / YE	(12) 4979	(12) II	(12) —	(12) AUTOSAR CAN Bus [+] 2 Serial Data	(12) 12	(12) 0.5	(12) BU / YE	(12) 4979	(12) IV	(12) —
(13) 13	(13) 0.5	(13) WH	(13) 4978	(13) II	(13) —	(13) AUTOSAR CAN Bus [-] 2 Serial Data	(13) 13	(13) 0.5	(13) WH	(13) 4978	(13) IV	(13) —
(14) 14	(14) 0.5	(14) BU / BK	(14) 4977	(14) II	(14) —	(14) AUTOSAR CAN Bus [+] 3 Serial Data	(14) 14	(14) 0.5	(14) BU / BK	(14) 4977	(14) IV	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 4976	(15) II	(15) —	(15) AUTOSAR CAN Bus [-] 3 Serial Data	(15) 15	(15) 0.5	(15) WH	(15) 4976	(15) IV	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—

X250A Radiator Extension Wiring Harness to Forward Lamp Wiring Harness



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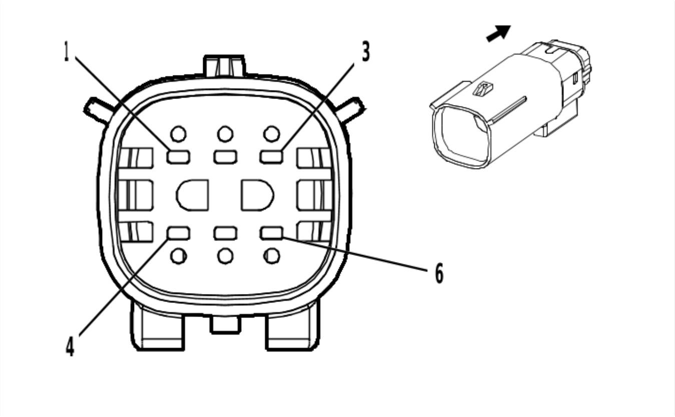


1986159

Connector Part Information
- Harness Type: Radiator Extension Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F

Connector Part Information
- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 33482-3640
- Service Connector: 19367742
- Description: 6-Way M 1.5 MX Series, Sealed(BK)

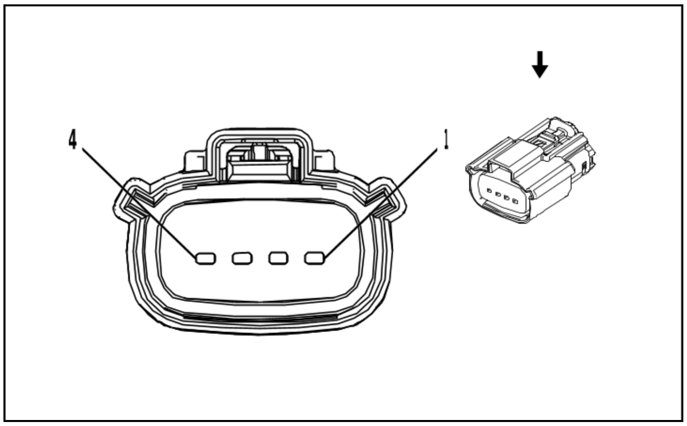
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X250A Radiator Extension Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / VT	(1) 10806	(1) I	(1) —	(1) Engine Control Module LIN Bus 1	(1) 1	(1) 0.5	(1) GN / VT	(1) 10806	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 150	(2) I	(2) —	(2) Ground	(2) 2	(2) 0.5	(2) BK	(2) 150	(2) II	(2) —
(3) 3	(3) 0.5	(3) VT / BU	(3) 5705	(3) I	(3) —	(3) Powertrain Main Relay Control	(3) 3	(3) 0.5	(3) VT / BU	(3) 5705	(3) II	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.5	(5) BU / GY	(5) 636	(5) I	(5) —	(5) Ambient Air Temperature Sensor Signal	(5) 5	(5) 0.5	(5) BU / GY	(5) 636	(5) II	(5) —
(6) 6	(6) 0.5	(6) BK / GY	(6) 626	(6) I	(6) —	(6) Engine Control Vehicle Sensors Low Reference 1	(6) 6	(6) 0.5	(6) BK / GY	(6) 626	(6) II	(6) —

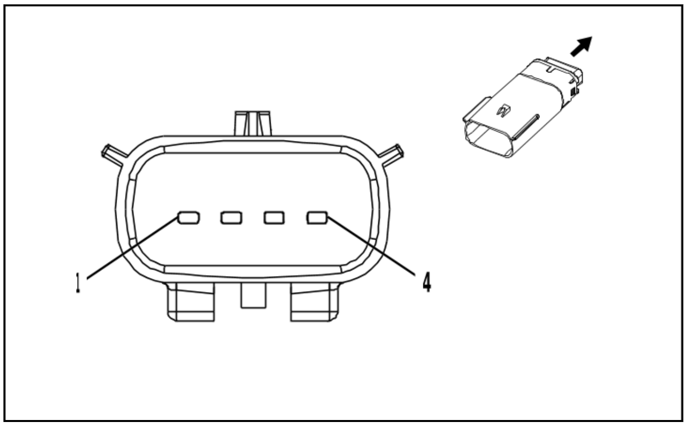
X250J Windshield Washer Pump Extension Wiring Harness to Forward Lamp Wiring Harness



2474747

Connector Part Information

- Harness Type: Windshield Washer Pump Extension Wiring Harness
- OEM Connector: 33471-0406
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 Series, Sealed(BK)



2917338

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 33481-4401
- Service Connector: 19330690
- Description: 4-Way M 1.5 Series, Sealed(BK)

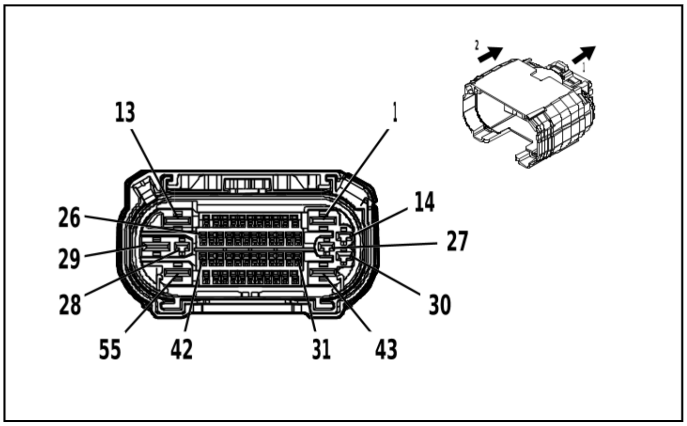
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	Not required	J-35616-3 (GY)	No Tool Required

X250J Windshield Washer Pump Extension Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GY / VT	(1) 228	(1) I	(1) —	(1) Ground (1) Windshield Washer Pump Control	(1) 1	(1) 0.75 (1) 0.75	(1) BK (1) GY / VT	(1) 2250 (1) 228	(1) III (1) III	(1) - UXA (1) UXA
(2) 2	(2) 1.5	(2) BU / VT	(2) 392	(2) I	(2) —	(2) Rear Window Washer Pump Control (2) Rear Window Washer Pump Control	(2) 2	(2) 0.75 (2) 0.75	(2) BU / VT (2) GY / VT	(2) 392 (2) 228	(2) III (2) III	(2) UXA (2) - UXA
(3) 3	(3) 0.75	(3) VT	(3) 185	(3) II	(3) —	(3) Low Washer Fluid Indicator Control	(3) 3	(3) 0.5	(3) VT	(3) 185	(3) III	(3) —
(4) 4	(4) 0.75	(4) BK	(4) 2250	(4) II	(4) —	(4) Ground	(4) 4	(4) 0.5	(4) BK	(4) 2250	(4) III	(4) —

X250R Body Wiring Harness to Forward Lamp Wiring Harness



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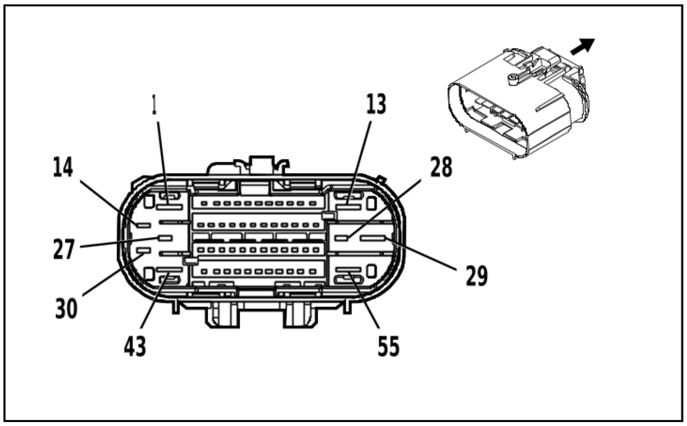


4993301

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35016652
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 35205173
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370818	J-35616-12 (BU)	J-38125-553
II	19371217	J-35616-12 (BU)	J-38125-553
III	84867140	J-35616-13 (BU)	J-38125-553

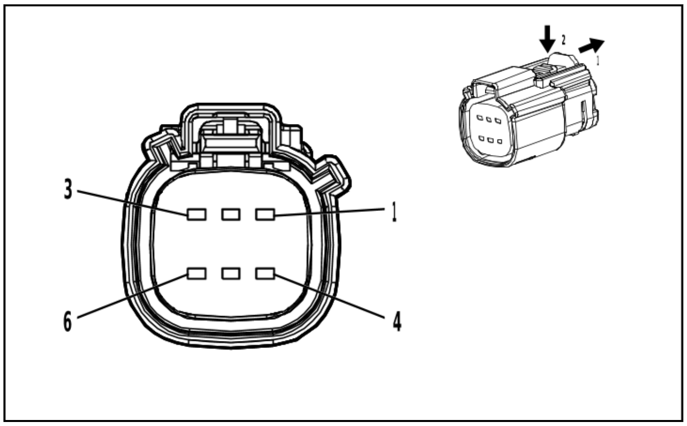
X250R Body Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 1	(2) YE	(2) 312	(2) II	(2) —	(2) Right Headlamp Low Beam Control	(2) 2	(2) 0.75	(2) YE	(2) 312	(2) III	(2) —
(3) 3	(3) 0.75	(3) WH	(3) 311	(3) I	(3) —	(3) Right Headlamp High Beam Control	(3) 3	(3) 0.5	(3) WH	(3) 311	(3) III	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.75	(5) GY / VT	(5) 228	(5) I	(5) —	(5) Windshield Washer Pump Control	(5) 5	(5) 0.75	(5) GY / VT	(5) 228	(5) III	(5) —
(6) 6	(6) 0.75	(6) BU / VT	(6) 392	(6) I	(6) —	(6) Rear Window Washer Pump Control	(6) 6	(6) 0.75	(6) BU / VT	(6) 392	(6) III	(6) —
(7) 7	(7) 0.75	(7) RD / YE	(7) 740	(7) I	(7) —	(7) Battery Positive Voltage	(7) 7	(7) 0.75	(7) RD / YE	(7) 740	(7) III	(7) —
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—
(9) 9	(9) 0.5	(9) GY / RD	(9) 10667	(9) I	(9) —	(9) Engine Control Sensors 5 Volt Reference	(9) 9	(9) 0.5	(9) GY / RD	(9) 10667	(9) III	(9) —
(10) 10	(10) 0.5	(10) BK / GN	(10) 580	(10) I	(10) —	(10) Engine Control Sensors Low Reference 2	(10) 10	(10) 0.5	(10) BK / GN	(10) 580	(10) III	(10) —
(11) 11	(11) 0.5	(11) YE / WH	(11) 3200	(11) I	(11) —	(11) Throttle Inlet Absolute Pressure Sensor Signal	(11) 11	(11) 0.5	(11) YE / WH	(11) 3200	(11) III	(11) —
(12) 12	(12) 1	(12) BK	(12) 3	(12) II	(12) —	(12) Run/ Crank Ignition 1 Voltage	(12) 12	(12) 0.75	(12) BK	(12) 1	(12) III	(12) —
13 - 14	—	—	—	—	—	Not Occupied	13 - 14	—	—	—	—	—
(15) 15	(15) 0.5	(15) BU / GY	(15) 636	(15) I	(15) —	(15) Ambient Air Temperature Sensor Signal	(15) 15	(15) 0.5	(15) BU / GY	(15) 636	(15) III	(15) —
(16) 16	(16) 0.5	(16) BK / GY	(16) 626	(16) I	(16) —	(16) Engine Control Vehicle Sensors Low Reference 1	(16) 16	(16) 0.5	(16) BK / GY	(16) 626	(16) III	(16) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(17) 17	(17) 0.35	(17) BN / GN	(17) 4064	(17) I	(17) —	(17) Hood Status B Signal	(17) 17	(17) 0.5	(17) BN / GN	(17) 4064	(17) III	(17) —
(18) 18	(18) 0.5	(18) YE	(18) 4063	(18) I	(18) —	(18) Hood Status A Signal	(18) 18	(18) 0.5	(18) YE	(18) 4063	(18) III	(18) —
19 - 20	—	—	—	—	—	Not Occupied	19 - 20	—	—	—	—	—
(21) 21	(21) 0.35	(21) BU / GN	(21) 1253	(21) I	(21) —	(21) Right Front Park Lamp Control	(21) 21	(21) 0.5	(21) BU / GN	(21) 1253	(21) III	(21) —
(22) 22	(22) 0.5	(22) GN / VT	(22) 1315	(22) I	(22) —	(22) Right Front Turn Signal Lamp Control	(22) 22	(22) 0.5	(22) GN / VT	(22) 1315	(22) III	(22) —
23	—	—	—	—	—	Not Occupied	23	—	—	—	—	—
(24) 24	(24) 0.75	(24) BN / GY	(24) 29	(24) I	(24) —	(24) Horn Control	(24) 24	(24) 0.75	(24) BN / GY	(24) 29	(24) III	(24) —
25	—	—	—	—	—	Not Occupied	25	—	—	—	—	—
(26) 26	(26) 0.35	(26) VT	(26) 185	(26) I	(26) —	(26) Low Washer Fluid Indicator Control	(26) 26	(26) 0.5	(26) VT	(26) 185	(26) III	(26) —
27 - 31	—	—	—	—	—	Not Occupied	27 - 31	—	—	—	—	—
(32) 32	(32) 0.5	(32) BN / GN	(32) 4246	(32) I	(32) —	(32) Identification Lamp Control	(32) 32	(32) 0.5	(32) BN / GN	(32) 4246	(32) III	(32) —
33	—	—	—	—	—	Not Occupied	33	—	—	—	—	—
(34) 34	(34) 0.5	(34) GN / VT	(34) 10806	(34) I	(34) —	(34) Engine Control Module LIN Bus 1	(34) 34	(34) 0.5	(34) GN / VT	(34) 10806	(34) III	(34) —
(35) 35	(35) 0.5	(35) VT / BU	(35) 5705	(35) I	(35) —	(35) Powertrain Main Relay Control	(35) 35	(35) 0.5	(35) VT / BU	(35) 5705	(35) III	(35) —
36 - 37	—	—	—	—	—	Not Occupied	36 - 37	—	—	—	—	—
(38) 38	(38) 0.5	(38) VT	(38) 1203	(38) I	(38) —	(38) Right Park Lamp Control 2	(38) 38	(38) —	(38) —	(38) —	(38) —	(38) —
(39) 39	(39) 0.5	(39) BU / BN	(39) 7539	(39) I	(39) —	(39) Right Front DRL Control	(39) 39	(39) 0.5	(39) BU / BN	(39) 7539	(39) III	(39) —
(40) 40	(40) 0.35	(40) WH / YE	(40) 7545	(40) I	(40) —	(40) Right Front Turn Signal Lamp Feedback Signal	(40) 40	(40) 0.5	(40) WH / YE	(40) 7545	(40) III	(40) —
41 - 43	—	—	—	—	—	Not Occupied	41 - 43	—	—	—	—	—
(44) 44	(44) 1	(44) BK	(44) 4	(44) II	(44) —	(44) Accessory Ignition Voltage	(44) 44	(44) 0.75	(44) BK	(44) 2	(44) III	(44) —
(45) 45	(45) 0.5	(45) BN / GY	(45) 5061	(45) I	(45) —	(45) Left Front Fog Lamp Control	(45) 45	(45) 0.5	(45) BN / GY	(45) 5061	(45) III	(45) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
46 - 51	—	—	—	—	—	Not Occupied	46 - 51	—	—	—	—	—
(52) 52	(52) 0.5	(52) OG / GN	(52) 1409	(52) I	(52) —	(52) Right Front Impact Discriminating Sensor Signal	(52) 52	(52) 0.5	(52) OG / GN	(52) 1409	(52) III	(52) —
(53) 53	(53) 0.5	(53) BK / OG	(53) 5600	(53) I	(53) —	(53) Right Front Impact Discriminating Sensor Low Reference	(53) 53	(53) 0.5	(53) BK / OG	(53) 5600	(53) III	(53) —
(54) 54	(54) 1	(54) BK	(54) 4	(54) II	(54) —	(54) Accessory Ignition Voltage	(54) 54	(54) 0.75	(54) BK	(54) 3	(54) III	(54) —
55	—	—	—	—	—	Not Occupied	55	—	—	—	—	—

X260 Front Object Alarm Sensor Wiring Harness to Forward Lamp Wiring Harness



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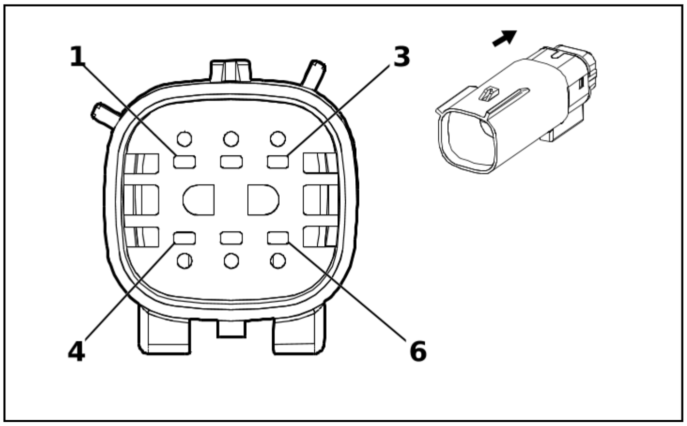


5318944

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 33472-0670
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(GY)

Connector Part Information

- Harness Type: Forward Lamp Wiring Harness
- OEM Connector: 33482-3628
- Service Connector: 84856300
- Description: 6-Way M 1.5 MX Series, Sealed(GY)

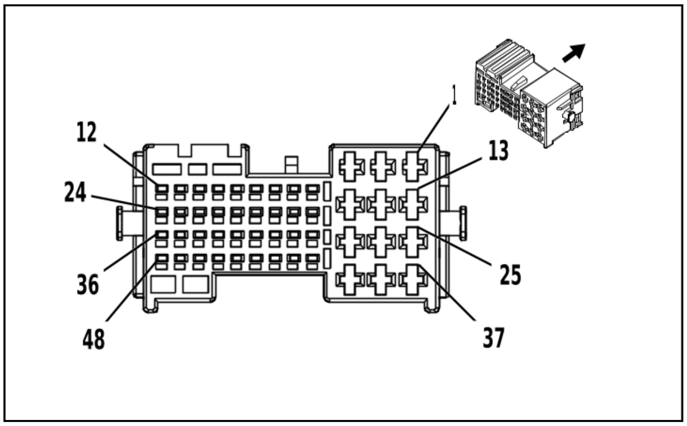
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

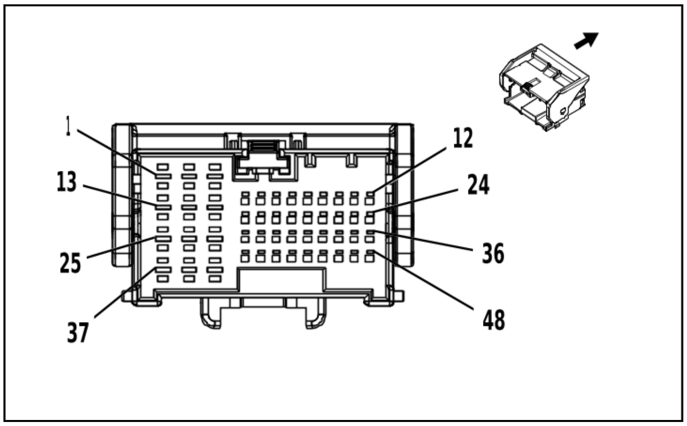
X260 Front Object Alarm Sensor Wiring Harness to Forward Lamp Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GY	(1) 5061	(1) I	(1) —	(1) Left Front Fog Lamp Control	(1) 1	(1) 0.5	(1) BN / GY	(1) 5061	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 550	(2) I	(2) —	(2) Ground	(2) 2	(2) 0.75	(2) BK	(2) 550	(2) II	(2) —
3 - 6	—	—	—	—	—	Not Occupied	3 - 6	—	—	—	—	—

X300 Body Wiring Harness to Instrument Panel Wiring Harness



3277913



3277901

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 2109452-2
- Service Connector: 19329739
- Description: 48-Way F 1.2 MCON, 2.8 MCP Series(BK)

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 5-2109455-2
- Service Connector: 19329740
- Description: 48-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19329758	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557
III	13575574	J-35616-5 (PU)	J-38125-215A
IV	86509266	J-35616-13 (BU)	J-38125-215A
V	Not required	No Tool Required	No Tool Required

X300 Body Wiring Harness to Instrument Panel Wiring Harness

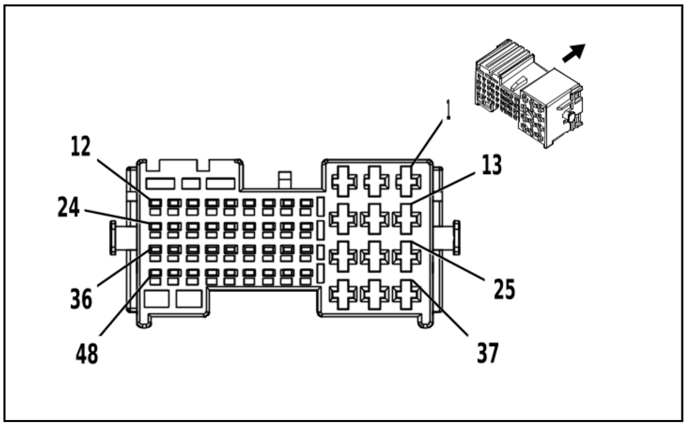
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1	(1) RD / BN	(1) 1140	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 1	(1) RD / BN	(1) 1140	(1) III	(1) —
(2) 2	(2) 1	(2) RD / BU	(2) 1240	(2) II	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 1	(2) RD / BU	(2) 1240	(2) III	(2) —
(3) 3	(3) 0.35	(3) RD / VT	(3) 3340	(3) II	(3) —	(3) Battery Positive Voltage	(3) 3	(3) 0.35	(3) RD / VT	(3) 3340	(3) III	(3) —
(4) 4	(4) 0.35	(4) GN / BU	(4) 6133	(4) I	(4) —	(4) Body Control Module LIN Bus 2	(4) 4	(4) 0.35	(4) GN / BU	(4) 6133	(4) IV	(4) —
(5) 5	(5) 0.35	(5) BU / WH	(5) 4985	(5) I	(5) —	(5) AUTOSAR CAN Bus [+] 5 Serial Data	(5) 5	(5) 0.35	(5) BU / WH	(5) 4985	(5) V	(5) —
(6) 6	(6) 0.35	(6) BU / YE	(6) 4984	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 5 Serial Data	(6) 6	(6) 0.35	(6) BU / YE	(6) 4984	(6) V	(6) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.35	(7) BU / WH	(7) 4985	(7) I	(7) —	(7) AUTOSAR CAN Bus [+] 5 Serial Data	(7) 7	(7) 0.35	(7) BU / WH	(7) 4985	(7) IV	(7) —
(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 5 Serial Data	(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) IV	(8) —
(9) 9	(9) 0.35	(9) GN / YE	(9) 2731	(9) I	(9) —	(9) Brake System Control Module LIN Bus 1	(9) 9	(9) 0.35	(9) GN / YE	(9) 2731	(9) IV	(9) —
(10) 10	(10) 0.5	(10) GN / BU	(10) 2733	(10) I	(10) —	(10) Brake System Control Module LIN Bus 2	(10) 10	(10) 0.35	(10) GN / BU	(10) 2733	(10) IV	(10) —
(11) 11	(11) 0.35 (11) 0.5	(11) BU / VT (11) BU / VT	(11) 4101 (11) 4101	(11) I (11) I	(11) A45 (11) - A45	(11) AUTOSAR CAN Bus [+] 4 Serial Data (11) AUTOSAR CAN Bus [+] 4 Serial Data	(11) 11	(11) 0.35	(11) BU / VT	(11) 4101	(11) IV	(11) —
(12) 12	(12) 0.35 (12) 0.5	(12) WH (12) WH	(12) 4100 (12) 4100	(12) I (12) I	(12) A45 (12) - A45	(12) AUTOSAR CAN Bus [-] 4 Serial Data (12) AUTOSAR CAN Bus [-] 4 Serial Data	(12) 12	(12) 0.35	(12) WH	(12) 4100	(12) IV	(12) —
(13) 13	(13) 1.5	(13) RD / WH	(13) 1340	(13) II	(13) —	(13) Battery Positive Voltage	(13) 13	(13) 1.5	(13) RD / WH	(13) 1340	(13) III	(13) —
(14) 14	(14) 1.5	(14) RD / GN	(14) 1540	(14) II	(14) —	(14) Battery Positive Voltage	(14) 14	(14) 1.5	(14) RD / GN	(14) 1540	(14) III	(14) —
(15) 15	(15) 0.75	(15) RD / WH	(15) 3440	(15) II	(15) —	(15) Battery Positive Voltage	(15) 15	(15) 0.75	(15) RD / WH	(15) 3440	(15) III	(15) —
16 - 17	—	—	—	—	—	Not Occupied	16 - 17	—	—	—	—	—
(18) 18	(18) 0.35	(18) BU	(18) 4987	(18) I	(18) —	(18) AUTOSAR CAN Bus [+] 1 Serial Data	(18) 18	(18) 0.35	(18) BU	(18) 4987	(18) IV	(18) —
(19) 19	(19) 0.35	(19) WH	(19) 4986	(19) I	(19) —	(19) AUTOSAR CAN Bus [-] 1 Serial Data	(19) 19	(19) 0.35	(19) WH	(19) 4986	(19) IV	(19) —
(20) 20	(20) 0.35	(20) GY	(20) 1715	(20) I	(20) —	(20) Windshield Wiper Switch High Signal	(20) 20	(20) 0.35	(20) GY	(20) 1715	(20) IV	(20) —
(21) 21	(21) 0.5	(21) VT / OG	(21) 3482	(21) I	(21) —	(21) Driver Seat Belt Anchor Pretensioner Low Control	(21) 21	(21) 0.5	(21) VT / OG	(21) 3482	(21) IV	(21) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(22) 22	(22) 0.5	(22) OG / YE	(22) 3481	(22) I	(22) —	(22) Driver Seat Belt Anchor Pretensioner High Control	(22) 22	(22) 0.5	(22) OG / YE	(22) 3481	(22) IV	(22) —
(23) 23	(23) 0.5	(23) GY / OG	(23) 3480	(23) I	(23) —	(23) Passenger Seat Belt Anchor Pretensioner Low Control	(23) 23	(23) 0.5	(23) GY / OG	(23) 3480	(23) IV	(23) —
(24) 24	(24) 0.5	(24) OG / BN	(24) 3479	(24) I	(24) —	(24) Passenger Seat Belt Anchor Pretensioner High Control	(24) 24	(24) 0.5	(24) OG / BN	(24) 3479	(24) IV	(24) —
(25) 25	(25) 0.75	(25) GN / BK	(25) 116	(25) II	(25) —	(25) Left Rear Speaker [-] Control	(25) 25	(25) 0.75	(25) GN / BK	(25) 116	(25) III	(25) —
(26) 26	(26) 0.75	(26) GN	(26) 199	(26) II	(26) —	(26) Left Rear Speaker [+] Control	(26) 26	(26) 0.75	(26) GN	(26) 199	(26) III	(26) —
27 - 28	—	—	—	—	—	Not Occupied	27 - 28	—	—	—	—	—
(29) 29	(29) 0.5	(29) OG / YE	(29) 354	(29) I	(29) —	(29) Left Front Impact Discriminating Sensor Signal	(29) 29	(29) 0.5	(29) OG / YE	(29) 354	(29) IV	(29) —
(30) 30	(30) 0.5	(30) BK / OG	(30) 5045	(30) I	(30) —	(30) Left Front Impact Discriminating Sensor Low Reference	(30) 30	(30) 0.5	(30) BK / OG	(30) 5045	(30) IV	(30) —
(31) 31	(31) 0.5	(31) OG / GN	(31) 1409	(31) I	(31) —	(31) Right Front Impact Discriminating Sensor Signal	(31) 31	(31) 0.5	(31) OG / GN	(31) 1409	(31) IV	(31) —
(32) 32	(32) 0.5	(32) BK / OG	(32) 5600	(32) I	(32) —	(32) Right Front Impact Discriminating Sensor Low Reference	(32) 32	(32) 0.5	(32) BK / OG	(32) 5600	(32) IV	(32) —
(33) 33	(33) 0.5	(33) VT / OG	(33) 3478	(33) I	(33) —	(33) Driver Seat Belt Retractor Pretensioner Low Control	(33) 33	(33) 0.5	(33) VT / OG	(33) 3478	(33) IV	(33) —
(34) 34	(34) 0.5	(34) OG / WH	(34) 3477	(34) I	(34) —	(34) Driver Seat Belt Retractor Pretensioner High Control	(34) 34	(34) 0.5	(34) OG / WH	(34) 3477	(34) IV	(34) —
(35) 35	(35) 0.5	(35) WH / OG	(35) 3476	(35) I	(35) —	(35) Passenger Seat Belt Retractor Pretensioner Low Control	(35) 35	(35) 0.5	(35) WH / OG	(35) 3476	(35) IV	(35) —
(36) 36	(36) 0.5	(36) OG / GN	(36) 3475	(36) I	(36) —	(36) Passenger Seat Belt Retractor Pretensioner High Control	(36) 36	(36) 0.5	(36) OG / GN	(36) 3475	(36) IV	(36) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
37 - 44	—	—	—	—	—	Not Occupied	37 - 44	—	—	—	—	—
(45) 45	(45) 0.35	(45) GY / GN	(45) 328	(45) I	(45) —	(45) Interior Lamp Defeat Switch Signal	(45) 45	(45) 0.35	(45) GY / GN	(45) 328	(45) IV	(45) —
(46) 46	(46) 0.35	(46) GY	(46) 156	(46) I	(46) —	(46) Courtesy Lamp Switch Signal	(46) 46	(46) 0.35	(46) GY	(46) 156	(46) IV	(46) —
(47) 47	(47) 0.5	(47) GY	(47) 157	(47) I	(47) —	(47) Interior Lamp Control	(47) 47	(47) 0.5	(47) GY	(47) 157	(47) IV	(47) —
(48) 48	(48) 0.5	(48) WH / BN	(48) 6815	(48) I	(48) —	(48) Inadvertent Load Control	(48) 48	(48) 0.5	(48) WH / BN	(48) 6815	(48) IV	(48) —

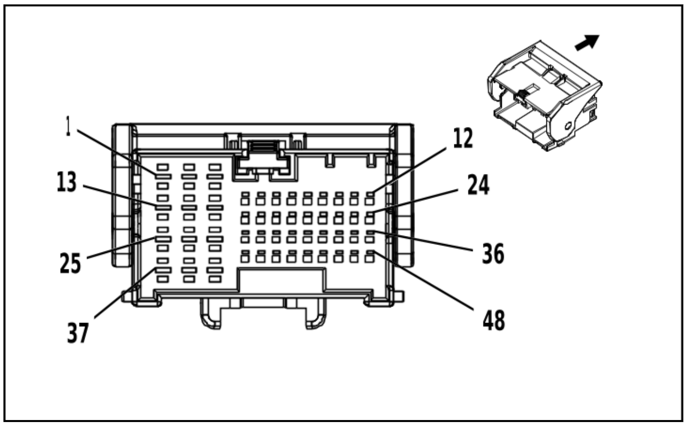
X301 Body Wiring Harness to Instrument Panel Wiring Harness



3924402

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2109452-3
- Service Connector: 19329737
- Description: 48-Way F 1.2 MCON, 2.8 MCP Series(GY)



3924404

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-2109455-3
- Service Connector: 19329738
- Description: 48-Way M 1.2 MCON, 2.8 MCP Series(GY)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300446	J-35616-12 (BU)	J-38125-12A
II	87814662	J-35616-35 (VT)	J-38125-557
III	13575574	J-35616-5 (PU)	J-38125-215A
IV	86509266	J-35616-13 (BU)	J-38125-215A

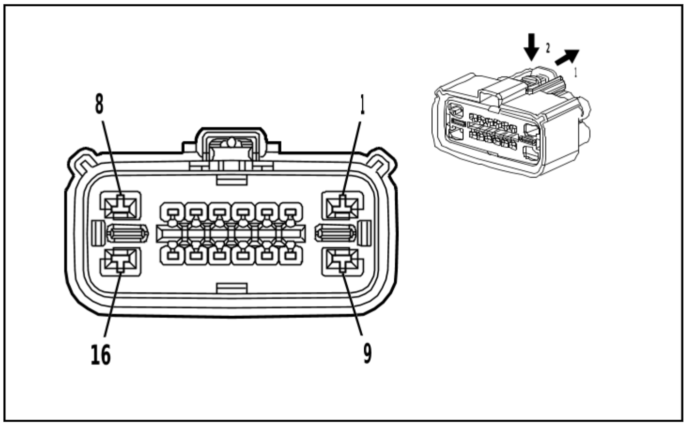
X301 Body Wiring Harness to Instrument Panel Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BU	(1) 47	(1) II	(1) —	(1) Trailer Auxiliary Control	(1) 1	(1) 2.5	(1) BU	(1) 47	(1) III	(1) —
(2) 2	(2) 2.5	(2) RD / BN	(2) 4142	(2) II	(2) —	(2) Primary Fused Battery Positive Voltage	(2) 2	(2) —	(2) —	(2) —	(2) —	(2) —
(3) 3	(3) 0.5	(3) RD / VT	(3) 1940	(3) II	(3) —	(3) Battery Positive Voltage	(3) 3	(3) 0.5	(3) RD / VT	(3) 1940	(3) III	(3) —
(4) 4	(4) 0.5	(4) YE	(4) 6817	(4) I	(4) —	(4) LED Backlight Dimming Control 1	(4) 4	(4) 0.5	(4) YE	(4) 6817	(4) IV	(4) —
(5) 5	(5) 0.5	(5) VT / GY	(5) 7117	(5) I	(5) —	(5) Front Axle Differential Lock Indicator Control	(5) 5	(5) 0.5	(5) VT / GY	(5) 7117	(5) IV	(5) —
(6) 6	(6) 0.5	(6) YE	(6) 7115	(6) I	(6) —	(6) Rear Axle Differential Lock Indicator Control	(6) 6	(6) 0.5	(6) YE	(6) 7115	(6) IV	(6) —
(7) 7	(7) 0.5	(7) YE / GN	(7) 7122	(7) I	(7) —	(7) Axle Differential Lock Switch Signal	(7) 7	(7) 0.5	(7) YE / GN	(7) 7122	(7) IV	(7) —
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—
(9) 9	(9) 0.5	(9) YE	(9) 2375	(9) I	(9) —	(9) Left Rear Outer Parking Assist Sensor Signal	(9) 9	(9) 0.5	(9) YE	(9) 2375	(9) IV	(9) —
(10) 10	(10) 0.75	(10) BN / WH	(10) 2374	(10) I	(10) —	(10) Object Sensor Voltage Reference	(10) 10	(10) 0.75	(10) BN / WH	(10) 2374	(10) IV	(10) —
(11) 11	(11) 0.5	(11) YE / BU	(11) 2376	(11) I	(11) —	(11) Left Rear Middle Parking Assist Sensor Signal	(11) 11	(11) 0.5	(11) YE / BU	(11) 2376	(11) IV	(11) —
(12) 12	(12) 0.5	(12) YE / VT	(12) 2378	(12) I	(12) —	(12) Right Rear Outer Parking Assist Sensor Signal	(12) 12	(12) 0.5	(12) YE / VT	(12) 2378	(12) IV	(12) —
(13) 13	(13) 0.35	(13) WH / BK	(13) 4769	(13) II	(13) —	(13) Emergency Call Backup Speaker [-] Control	(13) 13	(13) —	(13) —	(13) —	(13) —	(13) —
(14) 14	(14) 0.35	(14) GY / GN	(14) 4770	(14) II	(14) —	(14) Emergency Call Backup Speaker [+] Control	(14) 14	(14) —	(14) —	(14) —	(14) —	(14) —
15 - 20	—	—	—	—	—	Not Occupied	15 - 20	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(21) 21	(21) 0.35	(21) BU / YE	(21) 7176	(21) I	(21) —	(21) All Windows Open Switch Signal	(21) 21	(21) 0.35	(21) BU / YE	(21) 7176	(21) IV	(21) —
(22) 22	(22) 0.35	(22) GN / WH	(22) 24	(22) I	(22) —	(22) Backup Lamp Control	(22) 22	(22) 0.35	(22) GN / WH	(22) 24	(22) IV	(22) —
(23) 23	(23) 0.5	(23) YE / WH	(23) 2377	(23) I	(23) —	(23) Right Rear Middle Parking Assist Sensor Signal	(23) 23	(23) 0.5	(23) YE / WH	(23) 2377	(23) IV	(23) —
(24) 24	(24) 0.75	(24) BK / GY	(24) 2379	(24) I	(24) —	(24) Object Sensor Low Reference	(24) 24	(24) 0.75	(24) BK / GY	(24) 2379	(24) IV	(24) —
(25) 25	(25) 0.75 (25) 0.5	(25) BN / BU (25) BU / BN	(25) 118 (25) 1957	(25) II (25) II	(25) UQ3 (25) UQA	(25) Left Front Speaker [-] Control 1 (25) Left Front Midrange Speaker [-] Control	(25) 25	(25) 0.5	(25) BU / BN	(25) 1957	(25) III	(25) —
(26) 26	(26) 0.75 (26) 0.5	(26) BU (26) BU / VT	(26) 201 (26) 1857	(26) II (26) II	(26) UQ3 (26) UQA	(26) Left Front Speaker 1 [+] Control (26) Left Front Midrange Speaker [+] Control	(26) 26	(26) 0.5	(26) BU / VT	(26) 1857	(26) III	(26) —
27	—	—	—	—	—	Not Occupied	27	—	—	—	—	—
(28) 28	(28) 0.5	(28) VT / BK	(28) 739	(28) I	(28) —	(28) Run/Crank Ignition 1 Voltage	(28) 28	(28) 0.5	(28) VT / BK	(28) 739	(28) IV	(28) —
(29) 29	(29) 0.5	(29) VT / WH	(29) 1139	(29) I	(29) —	(29) Run/Crank Ignition 1 Voltage	(29) 29	(29) 0.5	(29) VT / WH	(29) 1139	(29) IV	(29) —
30 - 34	—	—	—	—	—	Not Occupied	30 - 34	—	—	—	—	—
(35) 35	(35) 0.5	(35) VT / RD	(35) 4049	(35) I	(35) —	(35) AC Power Outlet Sensor High Reference	(35) 35	(35) 0.5	(35) VT / RD	(35) 4049	(35) IV	(35) —
(36) 36	(36) 0.5	(36) BU / BN	(36) 6807	(36) I	(36) —	(36) DC/AC Inverter Control	(36) 36	(36) 0.5	(36) BU / BN	(36) 6807	(36) IV	(36) —
37 - 40	—	—	—	—	—	Not Occupied	37 - 40	—	—	—	—	—
(41) 41	(41) 0.35	(41) RD / BU	(41) 3240	(41) I	(41) —	(41) Battery Positive Voltage	(41) 41	(41) 0.5	(41) RD / BU	(41) 3240	(41) IV	(41) —
(42) 42	(42) 0.35	(42) RD / VT	(42) 4040	(42) I	(42) —	(42) Battery Positive Voltage	(42) 42	(42) 0.35	(42) RD / VT	(42) 4040	(42) IV	(42) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(43) 43	(43) 0.35	(43) BU	(43) 2307	(43) I	(43) —	(43) Passenger Air Bag On Indicator Control	(43) 43	(43) 0.35	(43) BU	(43) 2307	(43) IV	(43) —
(44) 44	(44) 0.35	(44) GN	(44) 2308	(44) I	(44) —	(44) Passenger Air Bag Off Indicator Control	(44) 44	(44) 0.35	(44) GN	(44) 2308	(44) IV	(44) —
(45) 45	(45) 0.35 (45) 0.35	(45) GN (45) VT / WH	(45) 3118 (45) 5234	(45) I (45) I	(45) C91 (45) - C91	(45) Roof Rail Air Bag Disable Indicator Control (45) Passenger Seat Belt Indicator Control	(45) 45	(45) 0.35	(45) VT / WH	(45) 5234	(45) IV	(45) —
(46) 46	(46) 0.75	(46) BARE	(46) 10116	(46) I	(46) —	(46) AC Outlet Low Reference	(46) 46	(46) 0.75	(46) BARE	(46) 10116	(46) IV	(46) —
(47) 47	(47) 0.75	(47) BK	(47) 10117	(47) I	(47) —	(47) AC Outlet Phase A Control	(47) 47	(47) 0.75	(47) BK	(47) 10117	(47) IV	(47) —
(48) 48	(48) 0.75	(48) RD	(48) 10118	(48) I	(48) —	(48) AC Outlet Phase B Control	(48) 48	(48) 0.75	(48) RD	(48) 10118	(48) IV	(48) —

X302A Front Seat Wiring Harness - Driver to Body Wiring Harness



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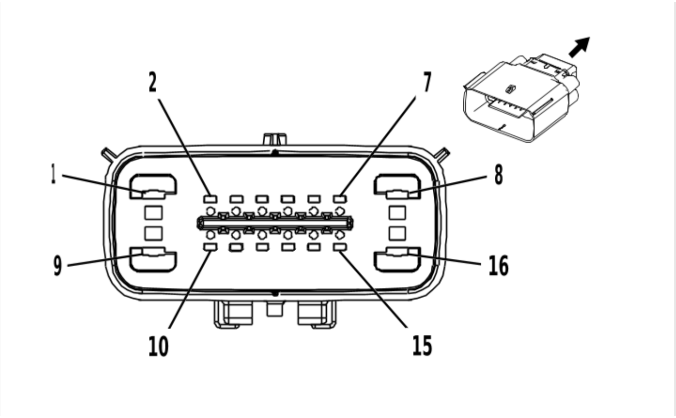


2373686

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34985-2161
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(YE)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 34986-1605
- Service Connector: 19332830
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(YE)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	Not required	J-35616-35 (VT)	No Tool Required

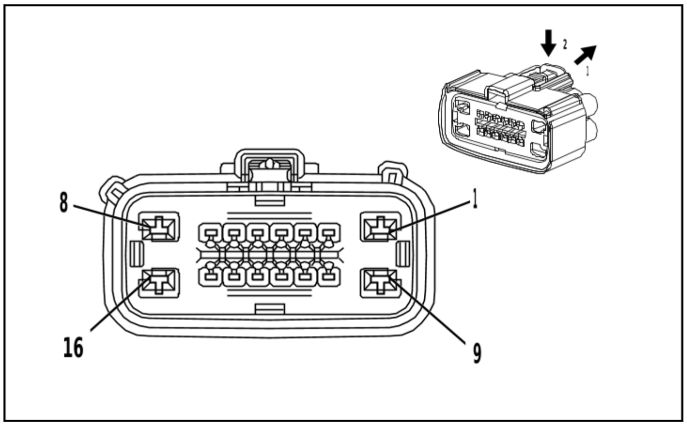
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
IV	Not required	No Tool Required	No Tool Required
V	19366658	J-35616-5 (PU)	J-38125-12A
VI	86800300	J-35616-3 (GY)	J-38125-217

X302A Front Seat Wiring Harness - Driver to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 3750	(1) III	(1) —	(1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 3750	(1) V	(1) —
(2) 2	(2) 0.5	(2) OG / BU	(2) 4962	(2) IV	(2) —	(2) Driver Seat Back Air Bag High Control	(2) 2	(2) 0.5	(2) OG / BU	(2) 4962	(2) VI	(2) —
(3) 3	(3) 0.5	(3) BK / OG	(3) 4963	(3) IV	(3) —	(3) Driver Seat Back Air Bag Low Control	(3) 3	(3) 0.5	(3) BK / OG	(3) 4963	(3) VI	(3) —
(4) 4	(4) 0.5	(4) BK / OG	(4) 1363	(4) I	(4) —	(4) Driver Seat Belt Switch Low Reference	(4) 4	(4) 0.5	(4) BK / OG	(4) 1363	(4) VI	(4) —
(5) 5	(5) 0.5	(5) OG / BN	(5) 238	(5) I	(5) —	(5) Driver Seat Belt Switch Signal	(5) 5	(5) 0.5	(5) OG / BN	(5) 238	(5) VI	(5) —
6 - 7	—	—	—	—	—	Not Occupied	6 - 7	—	—	—	—	—
(8) 8	(8) 2.5 (8) 2.5	(8) RD / BN (8) RD / GY	(8) 3640 (8) 3540	(8) III (8) III	(8) A2X/A45 (8) A2X-A45	(8) Battery Positive Voltage (8) Battery Positive Voltage	(8) 8	(8) 2.5	(8) RD / GY	(8) 3540	(8) V	(8) —
(9) 9	(9) 0.5	(9) RD / VT	(9) 3340	(9) III	(9) —	(9) Battery Positive Voltage	(9) 9	(9) 0.35	(9) RD / VT	(9) 3340	(9) V	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—
(11) 11	(11) 0.5	(11) BU	(11) 2425	(11) I	(11) —	(11) Driver Seat Back Heating Temperature Sensor Signal	(11) 11	(11) 0.5	(11) BU	(11) 2425	(11) VI	(11) —
(12) 12	(12) 0.5	(12) BK / YE	(12) 2080	(12) I	(12) —	(12) Driver Heated Seat Thermistor Low Reference	(12) 12	(12) 0.5	(12) BK / YE	(12) 2080	(12) VI	(12) —
(13) 13	(13) 0.5	(13) YE / GY	(13) 2079	(13) I	(13) —	(13) Driver Seat Heating Temperature Sensor Signal	(13) 13	(13) 0.5	(13) YE / GY	(13) 2079	(13) VI	(13) —
(14) 14	(14) 0.75	(14) BN / BK	(14) 2078	(14) II	(14) —	(14) Driver Seat Heating Element Low Reference	(14) 14	(14) 0.75	(14) BN / BK	(14) 2078	(14) VI	(14) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) II	(15) —	(15) Driver Seat Heating Element Control	(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) VI	(15) —
(16) 16	(16) 0.75	(16) RD / WH	(16) 3440	(16) III	(16) —	(16) Battery Positive Voltage	(16) 16	(16) 0.75	(16) RD / WH	(16) 3440	(16) V	(16) —

X302B Front Seat Wiring Harness - Driver to Body Wiring Harness



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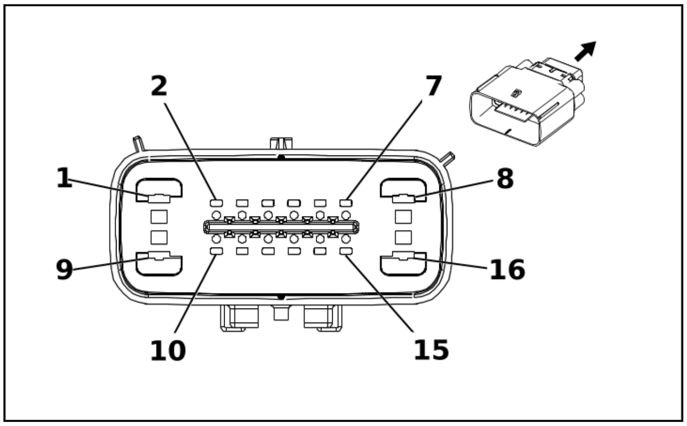

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Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34985-1607
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(GY)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 34986-8006
- Service Connector: 19352214
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(L-GY)

Terminal Part Information

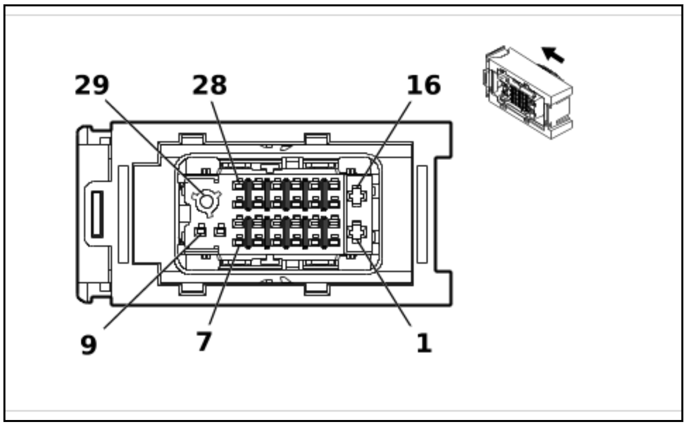
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	86800300	J-35616-3 (GY)	J-38125-217

X302B Front Seat Wiring Harness - Driver to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 0.35	(2) BU / GN	(2) 614	(2) I	(2) —	(2) Seat Memory Switch Set Signal	(2) 2	(2) 0.35	(2) BU / GN	(2) 614	(2) II	(2) —
(3) 3	(3) 0.35	(3) WH	(3) 615	(3) I	(3) —	(3) Seat Memory Switch Signal 1	(3) 3	(3) 0.35	(3) WH	(3) 615	(3) II	(3) —
4 - 9	—	—	—	—	—	Not Occupied	4 - 9	—	—	—	—	—
(10) 10	(10) 0.5	(10) VT / GN	(10) 839	(10) I	(10) —	(10) Run/ Crank Ignition 1 Voltage	(10) 10	(10) 0.5	(10) VT / GN	(10) 839	(10) II	(10) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(11) 11	(11) 0.5	(11) GN / VT	(11) 5906	(11) I	(11) —	(11) Driver Seat Blower Motor Control 1	(11) 11	(11) 0.5	(11) GN / VT	(11) 5906	(11) II	(11) —
(12) 12	(12) 0.35	(12) WH	(12) 4100	(12) I	(12) —	(12) AUTOSAR CAN Bus [-] 4 Serial Data	(12) 12	(12) 0.35	(12) WH	(12) 4100	(12) II	(12) —
(13) 13	(13) 0.35	(13) BU / VT	(13) 4101	(13) I	(13) —	(13) AUTOSAR CAN Bus [+] 4 Serial Data	(13) 13	(13) 0.35	(13) BU / VT	(13) 4101	(13) II	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4100	(14) I	(14) —	(14) AUTOSAR CAN Bus [-] 4 Serial Data	(14) 14	(14) 0.5	(14) WH	(14) 4100	(14) II	(14) —
(15) 15	(15) 0.35	(15) BU / VT	(15) 4101	(15) I	(15) —	(15) AUTOSAR CAN Bus [+] 4 Serial Data	(15) 15	(15) 0.5	(15) BU / VT	(15) 4101	(15) II	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—

X303 Body Wiring Harness to Front Side Door Door Wiring Harness - Driver



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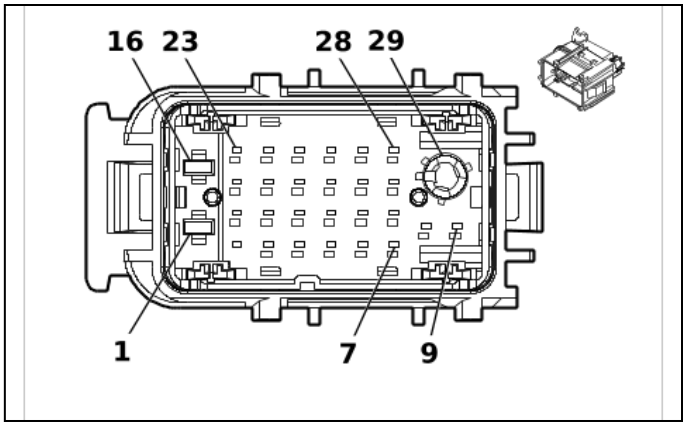


6154847

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35383762
- Service Connector: 85741556
- Description: 29-Way F 1.2, 2.8 CTS Coaxial Series, Sealed(YE)

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 29-Way M (YE)

Terminal Part Information

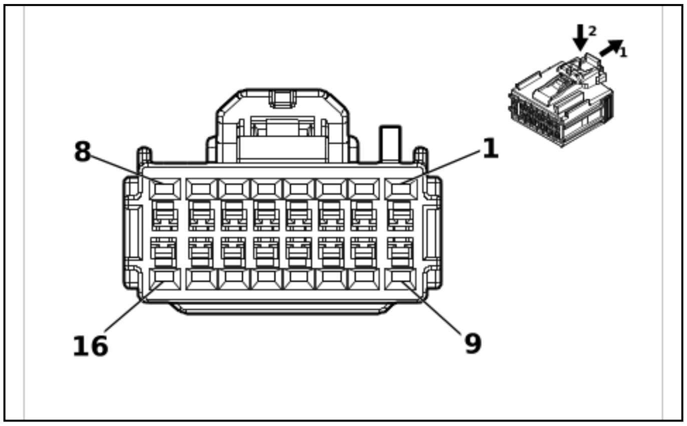
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	85741557	J-35616-12 (BU)	J-38125-215A
III	Service by Cable	No Tool Required	No Tool Required
IV	Not required	No Tool Required	No Tool Required
V	Service by Cable	No Tool Required	No Tool Required

X303 Body Wiring Harness to Front Side Door Door Wiring Harness - Driver

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 3750	(1) I	(1) —	(1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 1150	(1) IV	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.5	(3) BK / WH	(3) 451	(3) II	(3) —	(3) Signal Ground	(3) 3	(3) 0.5	(3) BK / WH	(3) 3051	(3) IV	(3) —
(4) 4	(4) 0.35	(4) BU / GN	(4) 614	(4) II	(4) —	(4) Seat Memory Switch Set Signal	(4) 4	(4) 0.35	(4) BU / GN	(4) 614	(4) IV	(4) —
(5) 5	(5) 0.35	(5) WH	(5) 615	(5) II	(5) —	(5) Seat Memory Switch Signal 1	(5) 5	(5) 0.35	(5) WH	(5) 615	(5) IV	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) II	(7) —	(7) Body Control Module LIN Bus 3	(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) IV	(7) —
8 - 10	—	—	—	—	—	Not Occupied	8 - 10	—	—	—	—	—
(11) 11	(11) 0.5	(11) OG / GN	(11) 2132	(11) II	(11) —	(11) Left Front Side Impact Sensor Signal	(11) 11	(11) 0.5	(11) OG / GN	(11) 2132	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BK / OG	(12) 6628	(12) II	(12) —	(12) Left Front Side Impact Sensor Low Reference	(12) 12	(12) 0.5	(12) BK / OG	(12) 6628	(12) IV	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—
(14) 14	(14) 0.35	(14) VT / GY	(14) 4302	(14) II	(14) —	(14) Passive Entry Left Antenna Signal Low	(14) 14	(14) 0.35	(14) VT / GY	(14) 4302	(14) IV	(14) —
(15) 15	(15) 0.35	(15) VT	(15) 4301	(15) II	(15) —	(15) Passive Entry Left Antenna Signal High	(15) 15	(15) 0.35	(15) VT	(15) 4301	(15) IV	(15) —
(16) 16	(16) 2.5	(16) RD / BU	(16) 1240	(16) I	(16) —	(16) Battery Positive Voltage	(16) 16	(16) 2.5	(16) RD / GY	(16) 3540	(16) IV	(16) —
(17) 17	(17) 0.5	(17) RD / VT	(17) 1940	(17) II	(17) —	(17) Battery Positive Voltage	(17) 17	(17) 0.5	(17) RD / VT	(17) 1940	(17) IV	(17) —
18	—	—	—	—	—	Not Occupied	18	—	—	—	—	—
(19) 19	(19) 0.35	(19) VT / GY	(19) 126	(19) II	(19) —	(19) Left Front Door Open Switch Signal	(19) 19	(19) 0.35	(19) VT / GY	(19) 126	(19) IV	(19) —
(20) 20	(20) 0.35	(20) BU	(20) 2675	(20) II	(20) —	(20) Left Front Exterior Door Handle Switch Unlock Signal	(20) 20	(20) 0.35	(20) BU	(20) 2675	(20) IV	(20) —
21 - 22	—	—	—	—	—	Not Occupied	21 - 22	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(23) 23	(23) 0.75	(23) WH	(23) 2679	(23) II	(23) —	(23) Lock Actuators Unlock Control 1	(23) 23	(23) 0.75	(23) WH	(23) 2679	(23) IV	(23) —
(24) 24	(24) 0.75	(24) GY	(24) 2681	(24) II	(24) —	(24) Left Front Door Lock Actuator Lock Control	(24) 24	(24) 0.75	(24) GY	(24) 2681	(24) IV	(24) —
25 - 26	—	—	—	—	—	Not Occupied	25 - 26	—	—	—	—	—
(27) 27	(27) 0.75 (27) 1	(27) BU (27) BU	(27) 201 (27) 201	(27) II (27) II	(27) UQ3 (27) UQA	(27) Left Front Speaker 1 [+] Control (27) Left Front Speaker 1 [+] Control	(27) 27	(27) 0.75 (27) 1	(27) BU (27) BU	(27) 201 (27) 201	(27) IV (27) IV	(27) UQ3 (27) UQA
(28) 28	(28) 0.75 (28) 1	(28) BN / BU (28) BN / BU	(28) 118 (28) 118	(28) II (28) II	(28) UQ3 (28) UQA	(28) Left Front Speaker [-] Control 1 (28) Left Front Speaker [-] Control 1	(28) 28	(28) 0.75 (28) 1	(28) BN / BU (28) BN / BU	(28) 118 (28) 118	(28) IV (28) IV	(28) UQ3 (28) UQA
(29) 29	(29) 0	(29) Coax Cable	(29) 4725	(29) III	(29) —	(29) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(29) 29	(29) 0	(29) Coax Cable	(29) 4725	(29) V	(29) —

X304 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness Extension Harness



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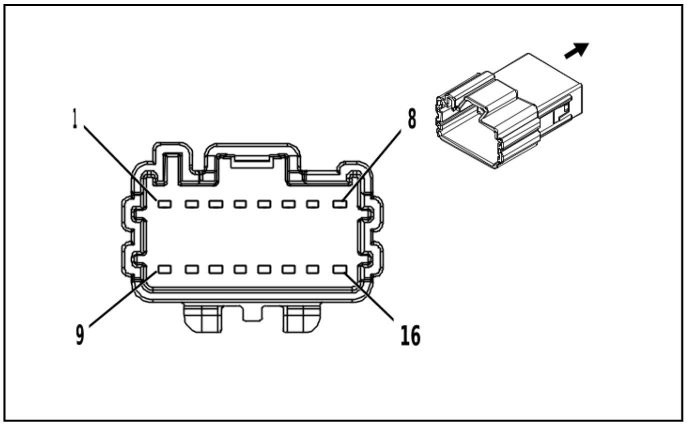
Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-9012
- Service Connector: 13541574
- Description: 16-Way F 1.2 MCON Series(BK)



4223086

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness Extension Harness
- OEM Connector: 6098-8828
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.2 Series(BK)

Terminal Part Information

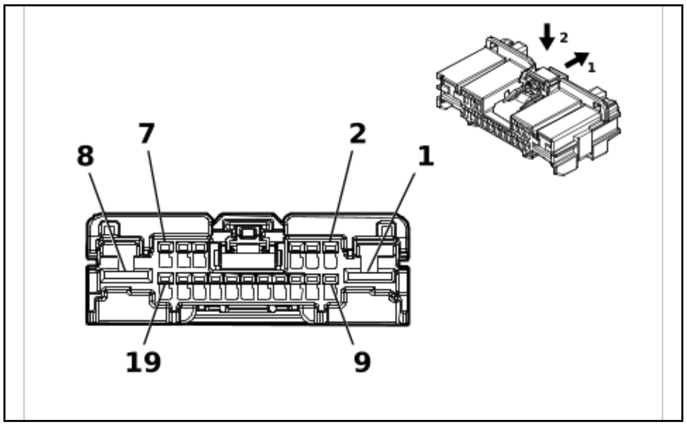
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	Not required	J-35616-17 (L-GN)	No Tool Required

X304 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness Extension Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 2203	(1) I	(1) —	(1) Enhanced Driver Mode 2 Switch Signal	(1) 1	(1) 0.35	(1) WH / BN	(1) 2203	(1) II	(1) —
(2) 2	(2) 0.35	(2) BK / GY	(2) 2204	(2) I	(2) —	(2) Enhanced Driver Mode 1 Switch Low Reference	(2) 2	(2) 0.35	(2) BK / GY	(2) 2204	(2) II	(2) —
(3) 3	(3) 0.35	(3) GN / BU	(3) 6133	(3) I	(3) —	(3) Body Control Module LIN Bus 2	(3) 3	(3) 0.35	(3) GN / BU	(3) 6133	(3) II	(3) —
(4) 4	(4) 0.35	(4) GN / YE	(4) 2731	(4) I	(4) —	(4) Brake System Control Module LIN Bus 1	(4) 4	(4) 0.35	(4) GN / YE	(4) 2731	(4) II	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.35	(6) VT / GN	(6) 39	(6) I	(6) —	(6) Run/Crank Ignition 1 Voltage	(6) 6	(6) 0.35	(6) VT / GN	(6) 39	(6) II	(6) —
(7) 7	(7) 0.5	(7) RD / VT	(7) 6340	(7) I	(7) —	(7) Battery Positive Voltage	(7) 7	(7) 0.5	(7) RD / VT	(7) 6340	(7) II	(7) —
(8) 8	(8) 0.35	(8) RD / GN	(8) 5140	(8) I	(8) —	(8) Battery Positive Voltage	(8) 8	(8) 0.35	(8) RD / GN	(8) 5140	(8) II	(8) —
(9) 9	(9) 0.35	(9) BU / WH	(9) 4985	(9) I	(9) —	(9) AUTOSAR CAN Bus [+] 5 Serial Data	(9) 9	(9) 0.35	(9) BU / WH	(9) 4985	(9) II	(9) —
(10) 10	(10) 0.35	(10) BU / YE	(10) 4984	(10) I	(10) —	(10) AUTOSAR CAN Bus [-] 5 Serial Data	(10) 10	(10) 0.35	(10) BU / YE	(10) 4984	(10) II	(10) —
(11) 11	(11) 0.35	(11) BU / WH	(11) 4985	(11) I	(11) —	(11) AUTOSAR CAN Bus [+] 5 Serial Data	(11) 11	(11) 0.35	(11) BU / WH	(11) 4985	(11) II	(11) —
(12) 12	(12) 0.35	(12) BU / YE	(12) 4984	(12) I	(12) —	(12) AUTOSAR CAN Bus [-] 5 Serial Data	(12) 12	(12) 0.35	(12) BU / YE	(12) 4984	(12) II	(12) —
(13) 13	(13) 0.35	(13) YE	(13) 6817	(13) I	(13) —	(13) LED Backlight Dimming Control 1	(13) 13	(13) 0.35	(13) YE	(13) 6817	(13) II	(13) —
(14) 14	(14) 0.35	(14) GN / VT	(14) 4759	(14) I	(14) —	(14) Transmission Shift Lever Position Indicator 2 Control	(14) 14	(14) 0.35	(14) GN / VT	(14) 4759	(14) II	(14) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(15) 15	(15) 0.35	(15) BK / WH	(15) 2151	(15) I	(15) —	(15) Signal Ground	(15) 15	(15) 0.35	(15) BK / WH	(15) 2151	(15) II	(15) —
(16) 16	(16) 0.5	(16) BK	(16) 2050	(16) I	(16) —	(16) Ground (16) Ground	(16) 16	(16) 0.35 (16) 0.5	(16) BK (16) BK	(16) 2050 (16) 2050	(16) II (16) II	(16) - (NP0/NQH) (16) (NP0/NQH)

X305 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness



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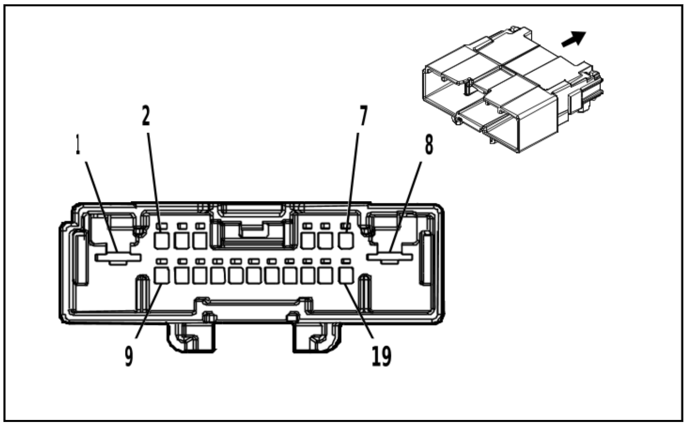

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Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8756
- Service Connector: 13526847
- Description: 19-Way F 1.2, 6.3 Series(BK)

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8086
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way M 1.2 MCON, 6.3 YESC Series(BK)

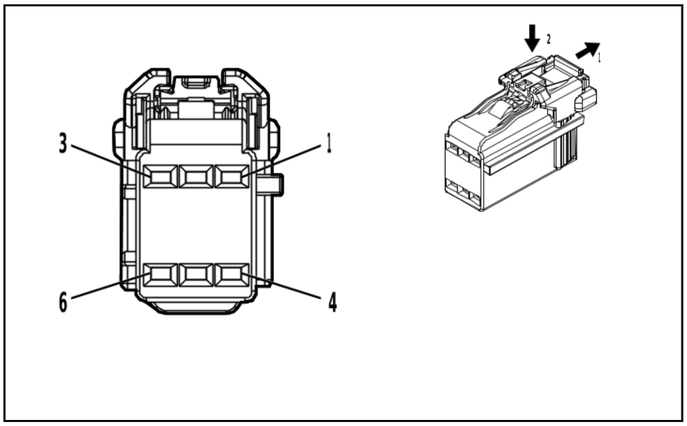
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13578928	J-35616-42 (RD)	J-38125-11A
II	19371240	J-35616-12 (BU)	J-38125-215A
III	84962854	J-35616-12 (BU)	J-38125-215A
IV	Not required	J-35616-13 (BU)	No Tool Required
V	Not required	J-35616-17 (L-GN)	No Tool Required
VI	Not required	J-35616-43 (RD)	No Tool Required

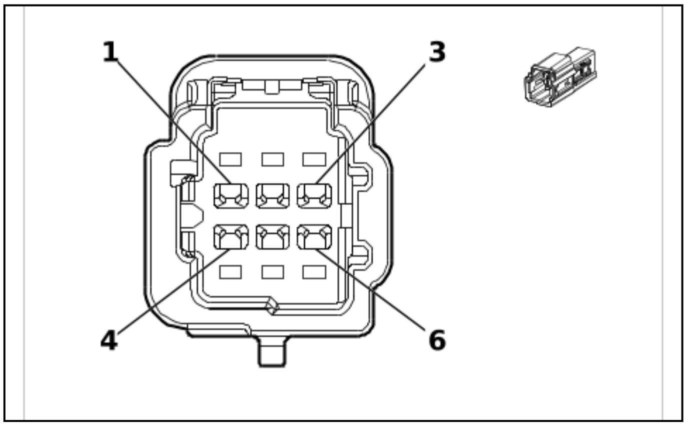
X305 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 2050	(1) I	(1) —	(1) Ground (1) Ground	(1) 1	(1) 1 (1) 2.5	(1) BK (1) BK	(1) 2050 (1) 2050	(1) VI (1) VI	(1) - (KI6/ KI7/ UBI/ UBP) (1) (KI6/ KI7/ UBI/ UBP)
(2) 2	(2) 0.5	(2) VT	(2) 4701	(2) III	(2) —	(2) Retained Accessory Power Control	(2) 2	(2) 0.5	(2) VT	(2) 4701	(2) V	(2) —
3 - 4	—	—	—	—	—	Not Occupied	3 - 4	—	—	—	—	—
(5) 5	(5) 0.75	(5) BARE	(5) 10116	(5) III	(5) —	(5) AC Outlet Low Reference	(5) 5	(5) 0.75	(5) BARE	(5) 10116	(5) IV	(5) —
(6) 6	(6) 0.75	(6) BK	(6) 10117	(6) III	(6) —	(6) AC Outlet Phase A Control	(6) 6	(6) 0.75	(6) BK	(6) 10117	(6) IV	(6) —
(7) 7	(7) 0.75	(7) RD	(7) 10118	(7) III	(7) —	(7) AC Outlet Phase B Control	(7) 7	(7) 0.75	(7) RD	(7) 10118	(7) IV	(7) —
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—
(9) 9	(9) 1	(9) VT	(9) 1001	(9) II	(9) —	(9) Retained Accessory Power Ignition Voltage	(9) 9	(9) 1	(9) VT	(9) 1001	(9) IV	(9) —
10 - 11	—	—	—	—	—	Not Occupied	10 - 11	—	—	—	—	—
(12) 12	(12) 0.35	(12) WH / GY	(12) 4997	(12) III	(12) —	(12) Immobilizer Antenna Low Signal	(12) 12	(12) 0.35	(12) WH / GY	(12) 4997	(12) V	(12) —
(13) 13	(13) 0.35	(13) BN / BK	(13) 4996	(13) III	(13) —	(13) Immobilizer Antenna Signal [+]	(13) 13	(13) 0.35	(13) BN / BK	(13) 4996	(13) V	(13) —
(14) 14	(14) 0.35	(14) BN / BK	(14) 3552	(14) III	(14) —	(14) Interior Passive Entry Antenna 1 High Signal	(14) 14	(14) 0.35	(14) BN / BK	(14) 3552	(14) V	(14) —
(15) 15	(15) 0.35	(15) WH	(15) 3553	(15) III	(15) —	(15) Interior Passive Entry Antenna 1 Low Signal	(15) 15	(15) 0.35	(15) WH	(15) 3553	(15) V	(15) —
16 - 17	—	—	—	—	—	Not Occupied	16 - 17	—	—	—	—	—
(18) 18	(18) 0.5	(18) VT / RD	(18) 4049	(18) III	(18) —	(18) AC Power Outlet Sensor High Reference	(18) 18	(18) 0.5	(18) VT / RD	(18) 4049	(18) V	(18) —
(19) 19	(19) 0.5	(19) BU / BN	(19) 6807	(19) III	(19) —	(19) DC/AC Inverter Control	(19) 19	(19) 0.5	(19) BU / BN	(19) 6807	(19) V	(19) —

X315 Instrument Panel Wiring Harness to Air Conditioning Wiring Harness



4862126



5714613

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: 84613129
- Description: 6-Way F 1.2 Series(BK)

Connector Part Information
- Harness Type: Air Conditioning Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 1.2 MBS Series(BK)

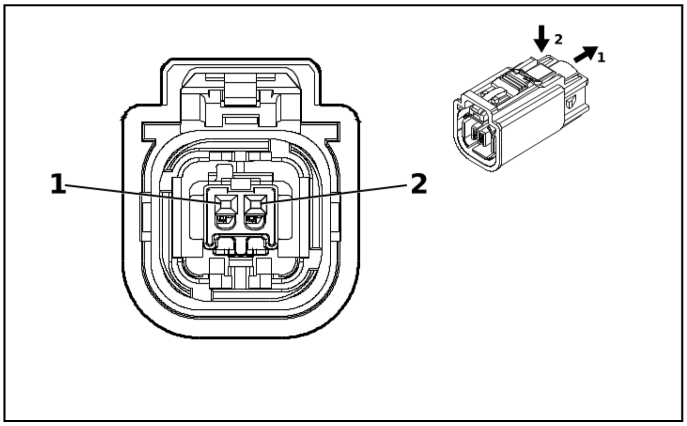
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X315 Instrument Panel Wiring Harness to Air Conditioning Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY	(1) 6137	(1) I	(1) —	(1) Air Conditioning Evaporator Temperature Sensor Signal	(1) 1	(1) 0.35	(1) GY	(1) 6137	(1) II	(1) —
(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) I	(2) —	(2) Body Control Module LIN Bus 6	(2) 2	(2) 0.35	(2) GN / VT	(2) 2852	(2) II	(2) —
(3) 3	(3) 0.35	(3) BK / YE	(3) 407	(3) I	(3) —	(3) Sensor Low Reference	(3) 3	(3) 0.35	(3) BK / YE	(3) 407	(3) II	(3) —
(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) I	(4) —	(4) HVAC Remote Enable Signal	(4) 4	(4) 0.35	(4) WH / YE	(4) 4634	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY	(5) 6137	(5) I	(5) —	(5) Air Conditioning Evaporator Temperature Sensor Signal	(5) 5	(5) 0.35	(5) GY	(5) 6137	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—

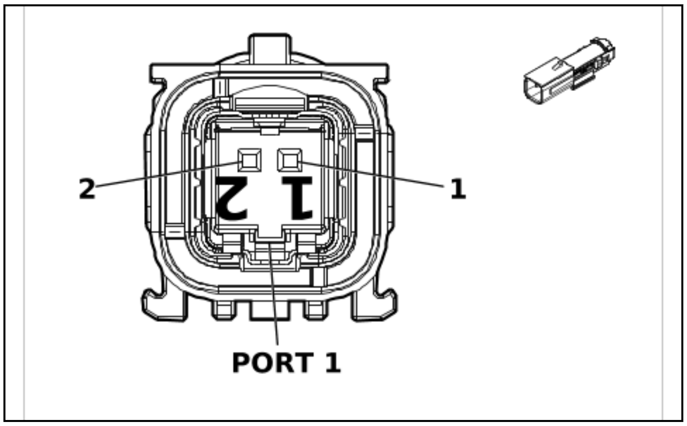
X367 Body Wiring Harness to Instrument Panel Wiring Harness



5358341

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35212796
- Service Connector: 85090373
- Description: 2-Way F 0.5 CTS, AMEC High Speed Data Series(BK)



5909921

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35185531
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 2-Way M 0.5 CTS, AMEC High Speed Data Series(BK)

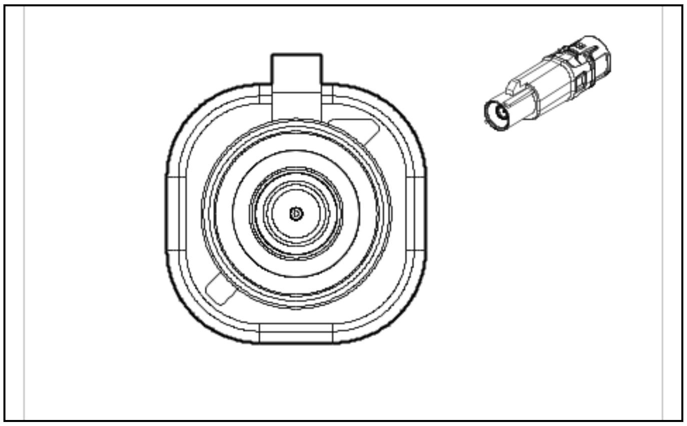
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required
II	Not required	EL-35616-58 (BK)	No Tool Required

X367 Body Wiring Harness to Instrument Panel Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.1	(1) WH	(1) 7211	(1) I	(1) —	(1) Ethernet Bus 4 [+]	(1) 1	(1) 0.1	(1) WH	(1) 7211	(1) II	(1) —
(2) 2	(2) 0.1	(2) GN	(2) 7210	(2) I	(2) —	(2) Ethernet Bus 4 [-]	(2) 2	(2) 0.1	(2) GN	(2) 7210	(2) II	(2) —

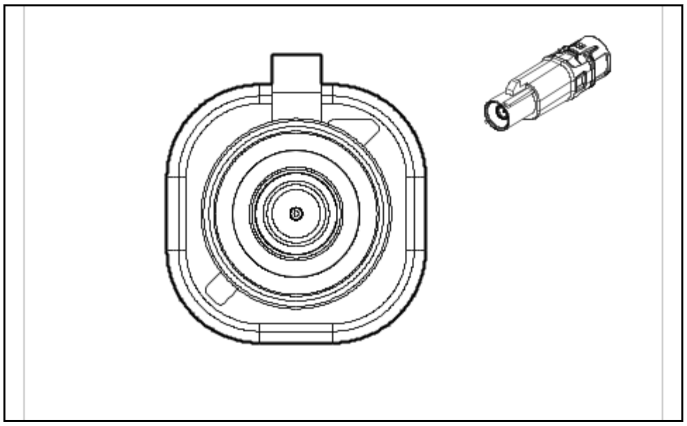
X371 Rearview Camera Wiring Harness Jumper to Rearview Camera Wiring Harness



6154842

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness Jumper
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F



6154842

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness
- OEM Connector: 13517385
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(GY)

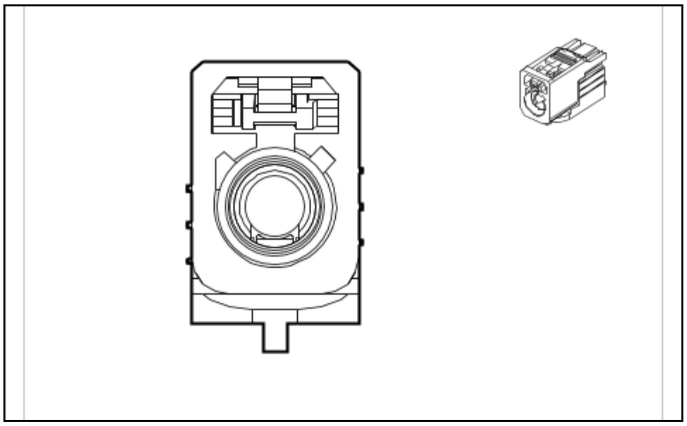
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X371 Rearview Camera Wiring Harness Jumper to Rearview Camera Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	LVDS	—	I	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	—	—	LVDS	—	I	—

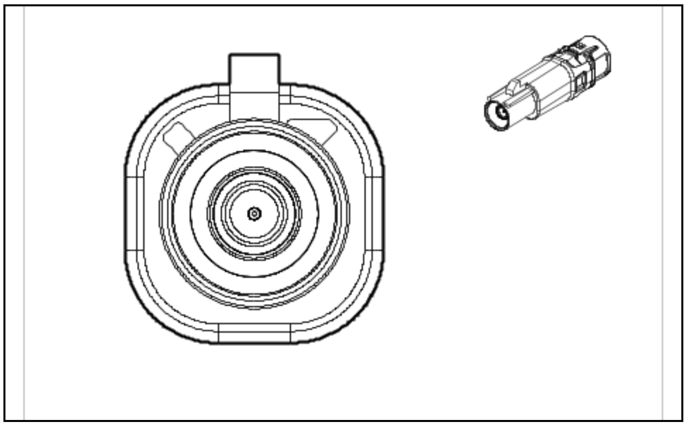
X372 Front View Underbody Camera Jumper Wiring Harness to Rearview Camera Wiring Harness (UXA)



5633890

Connector Part Information

- Harness Type: Front View Underbody Camera Jumper Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F



5295025

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness
- OEM Connector: 13517379
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

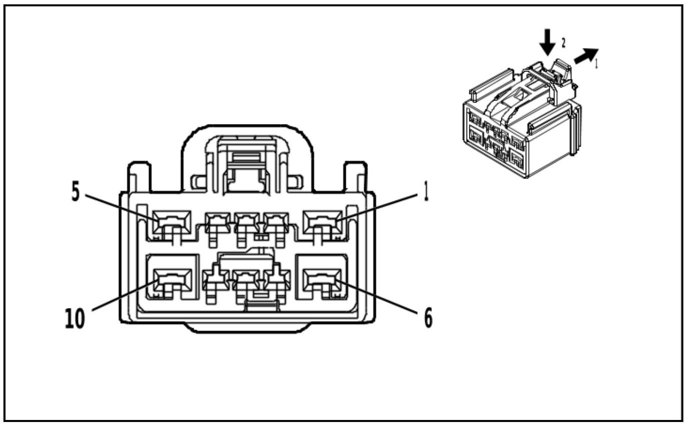
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X372 Front View Underbody Camera Jumper Wiring Harness to Rearview Camera Wiring Harness (UXA)

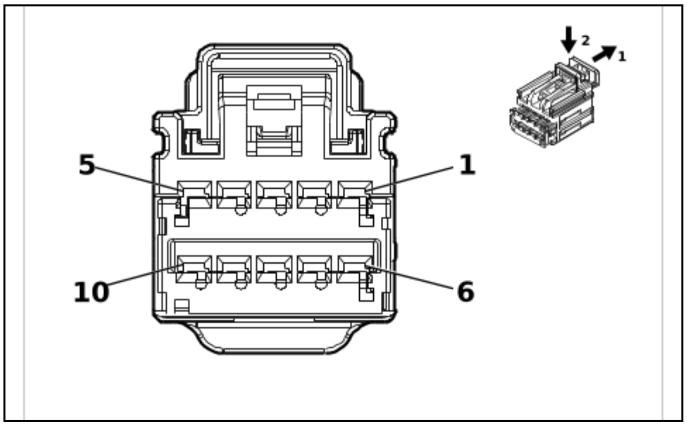
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	LVDS	—	I	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	—	—	LVDS	—	I	—

X375 Roof Wiring Harness to Sunroof Wiring Harness



5020939

Connector Part Information
- Harness Type: Roof Wiring Harness
- OEM Connector: 7289-9153-40
- Service Connector: 13518747
- Description: 10-Way F 1.5, 2.8 Kaizen Series(L-GY)



6153939

Connector Part Information
- Harness Type: Sunroof Wiring Harness
- OEM Connector: 15512475
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.5 OCS Series(BK)

Terminal Part Information

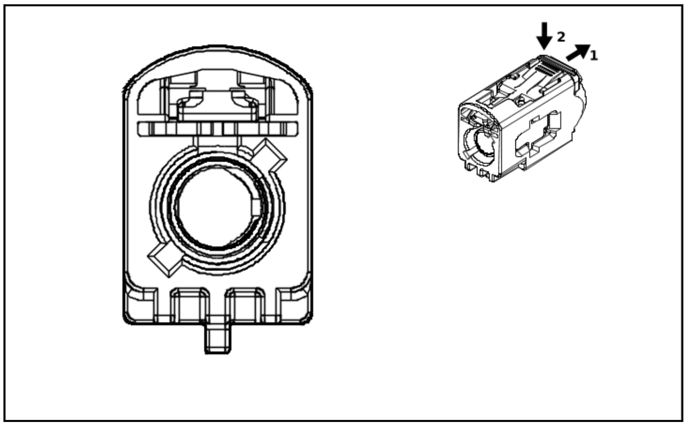
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332534	J-35616-2A (GY)	J-38125-557
II	85544080	J-35616-4A (PU)	J-38125-11A
III	Not required	J-35616-2A (GY)	No Tool Required

X375 Roof Wiring Harness to Sunroof Wiring Harness

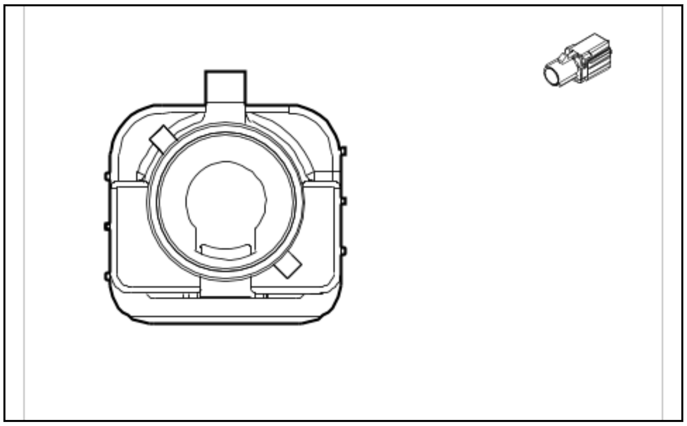
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) —	(2) —	(2) —	(2) —	(2) —	(2) Sunroof Switch Serial Data 1 Signal	(2) 2	(2) 0.35	(2) BARE	(2) 5027	(2) III	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.35	(4) GN / WH	(4) 2854	(4) I	(4) —	(4) Body Control Module LIN Bus 8	(4) 4	(4) 0.35	(4) BARE	(4) 3031	(4) III	(4) —
(5) 5	(5) 1.5	(5) BK	(5) 1850	(5) II	(5) —	(5) Ground	(5) 5	(5) —	(5) —	(5) —	(5) —	(5) —
(6) 6	(6) 1.5	(6) RD / YE	(6) 2340	(6) II	(6) —	(6) Battery Positive Voltage	(6) 6	(6) 0.35	(6) RD / YE	(6) 2340	(6) III	(6) —
(7) 7	(7) 0.35	(7) BU / VT	(7) 5027	(7) I	(7) —	(7) Sunroof Switch Serial Data 1 Signal	(7) 7	(7) —	(7) —	(7) —	(7) —	(7) —
(8) 8	(8) —	(8) —	(8) —	(8) —	(8) —	(8) Battery Positive Voltage	(8) 8	(8) 1.5	(8) RD / GY	(8) 40	(8) III	(8) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(9) 9	(9) 0.35	(9) WH / GN	(9) 3031	(9) I	(9) —	(9) Sunroof Vent Switch Signal	(9) 9	(9) —	(9) —	(9) —	(9) —	(9) —
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) Ground	(10) 10	(10) 1.5	(10) BK	(10) 50	(10) III	(10) —

X380 Instrument Panel Wiring Harness to Body Wiring Harness (UV2 / UXA - UVB)



5215274



5873701

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13516215
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BU)

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516061
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BU)

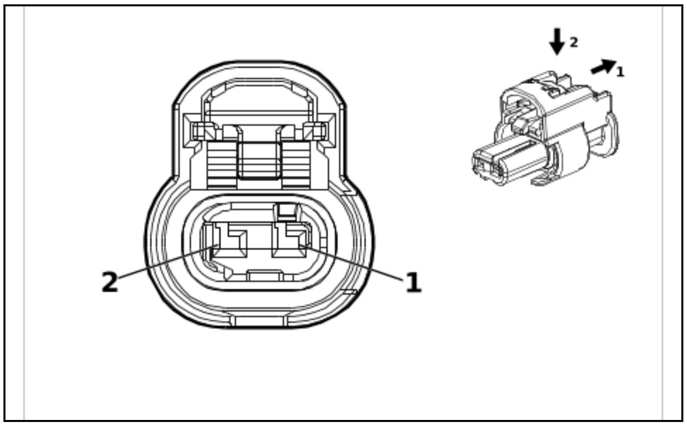
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

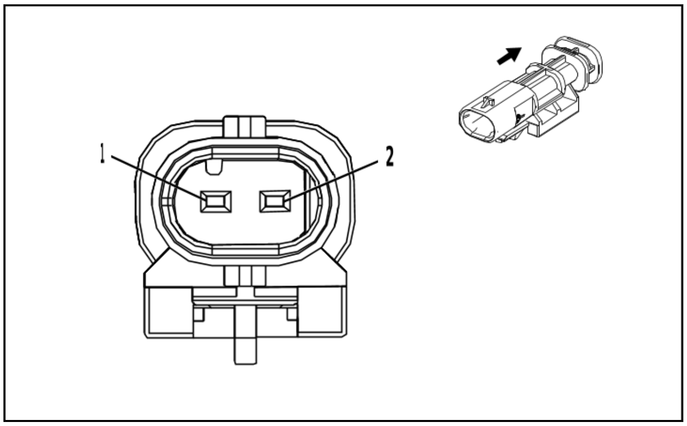
X380 Instrument Panel Wiring Harness to Body Wiring Harness (UV2 / UXA - UVB)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Video Processing Module Coaxial Video Signal	—	—	Coax Cable	—	I	—

X382 Chassis Wiring Harness to Chassis Wiring Harness (S0Y)



4649903



2474755

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13591337
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

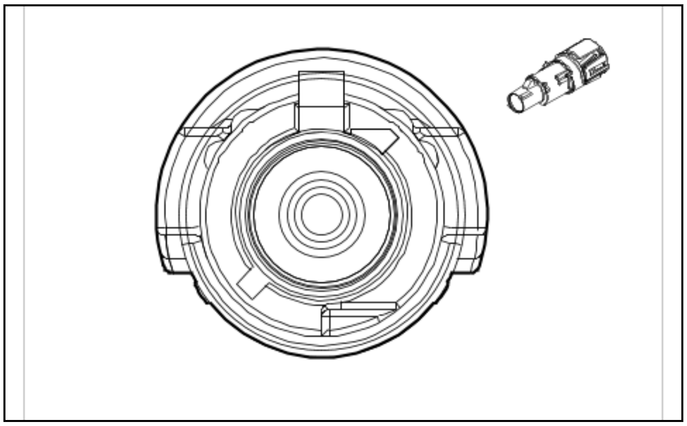
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X382 Chassis Wiring Harness to Chassis Wiring Harness (S0Y)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BU	(1) 840	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.75	(1) RD / BU	(1) 840	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 750	(2) I	(2) —	(2) Ground	(2) 2	(2) 0.75	(2) BK	(2) 750	(2) II	(2) —

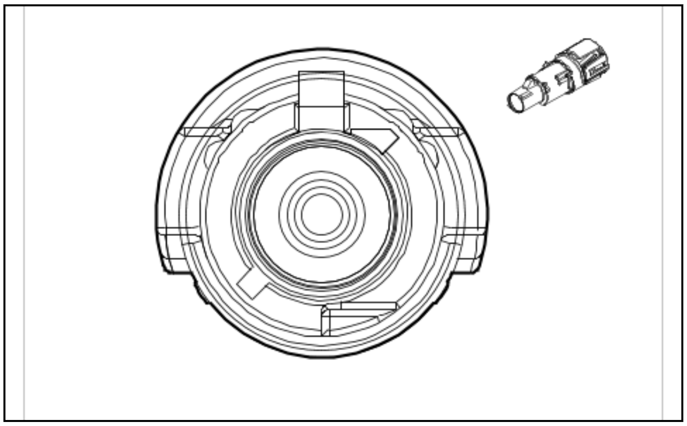
X383 Rearview Camera Wiring Harness Jumper to Body Wiring Harness



6154828

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness Jumper
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F



6154828

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 13516812
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(GY)

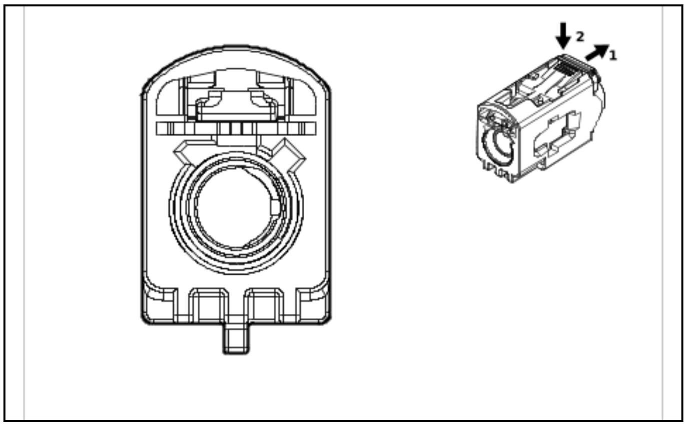
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X383 Rearview Camera Wiring Harness Jumper to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	LVDS	—	I	—	Underbody Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	—	—	LVDS	—	I	—

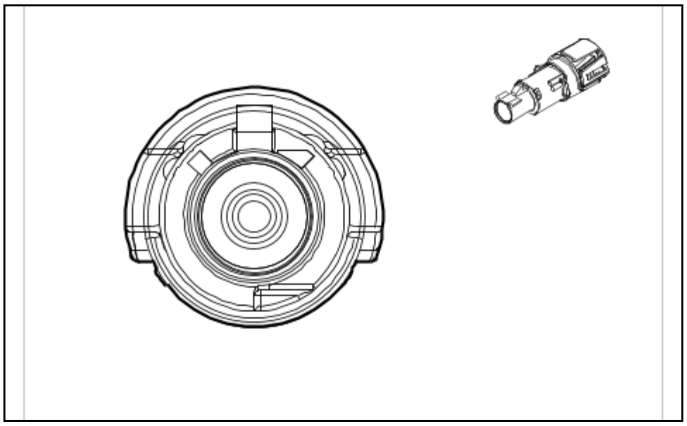
X384 Rearview Camera Wiring Harness Jumper to Body Wiring Harness (UXA)



5215396

Connector Part Information

- Harness Type: Rearview Camera Wiring Harness Jumper COAX
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F



5518522

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516806
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BK)

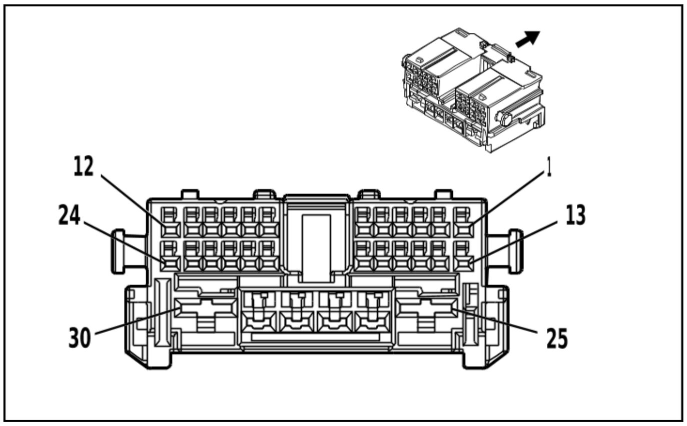
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

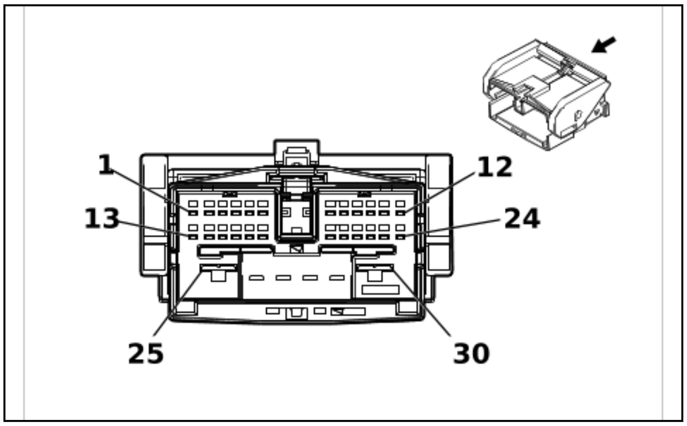
X384 Rearview Camera Wiring Harness Jumper to Body Wiring Harness (UXA)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X393 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver



4253192



4249201

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 7298-4329-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 7297-4331-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way M 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required
III	Not required	J-35616-43 (RD)	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required

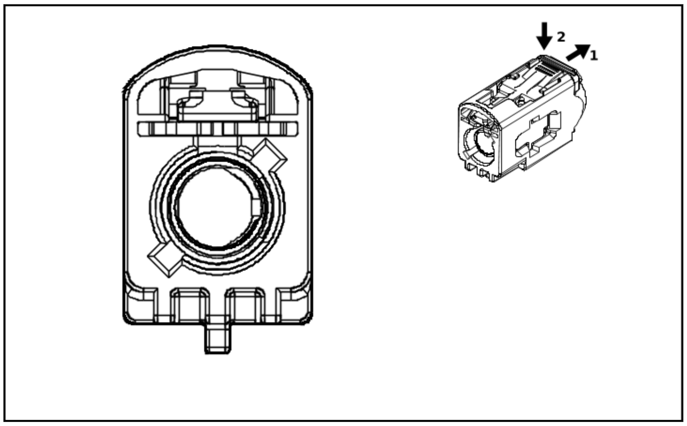
X393 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / GY	(1) 4784	(1) I	(1) —	(1) Left Front Door LED Backlight Dimming Control	(1) 1	(1) 0.35	(1) BN / GY	(1) 4784	(1) II	(1) —
(2) 2	(2) 0.35	(2) VT / YE	(2) 4244	(2) I	(2) —	(2) Left Front Door Lock Indicator Control	(2) 2	(2) 0.35	(2) VT / YE	(2) 4244	(2) II	(2) —
(3) 3	(3) 0.35	(3) WH / VT	(3) 4258	(3) I	(3) —	(3) Left Front Door Lock Status Signal	(3) 3	(3) 0.35	(3) WH / VT	(3) 4258	(3) II	(3) —
(4) 4	(4) 0.35	(4) BN / YE	(4) 2771	(4) I	(4) —	(4) Left Front Door Lock Switch Lock Signal	(4) 4	(4) 0.35	(4) BN / YE	(4) 2771	(4) II	(4) —
(5) 5	(5) 0.35	(5) BN / WH	(5) 2772	(5) I	(5) —	(5) Left Front Door Lock Switch Unlock Signal	(5) 5	(5) 0.35	(5) BN / WH	(5) 2772	(5) II	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.35	(6) GY / YE	(6) 1760	(6) I	(6) —	(6) Left Side Object Detection LED Control	(6) 6	(6) 0.35	(6) GY / YE	(6) 1760	(6) II	(6) —
(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) I	(7) —	(7) Body Control Module LIN Bus 3	(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) II	(7) —
(8) 8	(8) 0.35	(8) GY	(8) 745	(8) I	(8) —	(8) Left Front Door Ajar Switch Signal	(8) 8	(8) 0.35	(8) GY	(8) 745	(8) II	(8) —
(9) 9	(9) 0.35	(9) GY / GN	(9) 2763	(9) I	(9) —	(9) Window Switch Left Front Up Signal	(9) 9	(9) 0.35	(9) GY / GN	(9) 2763	(9) II	(9) —
(10) 10	(10) 0.35	(10) WH / BN	(10) 2764	(10) I	(10) —	(10) Window Switch Left Front Down Signal	(10) 10	(10) 0.35	(10) WH / BN	(10) 2764	(10) II	(10) —
(11) 11	(11) 0.35	(11) GN	(11) 2766	(11) I	(11) —	(11) Power Window Switch Left Front Express Signal	(11) 11	(11) 0.35	(11) GN	(11) 2766	(11) II	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 0.5	(13) WH	(13) 606	(13) I	(13) —	(13) Left Outside Rearview Mirror Heater Control	(13) 13	(13) 0.5	(13) WH	(13) 606	(13) II	(13) —
14 - 15	—	—	—	—	—	Not Occupied	14 - 15	—	—	—	—	—
(16) 16	(16) 0.35	(16) VT / BU	(16) 2788	(16) I	(16) —	(16) Left Front Mirror Motor Up [+] Down [-] Control	(16) 16	(16) 0.35	(16) VT / BU	(16) 2788	(16) II	(16) —
(17) 17	(17) 0.35	(17) YE / BN	(17) 2789	(17) I	(17) —	(17) Left Front Mirror Motor Common Control	(17) 17	(17) 0.35	(17) YE / BN	(17) 2789	(17) II	(17) —
(18) 18	(18) 0.35	(18) BN / BK	(18) 2790	(18) I	(18) —	(18) Left Front Mirror Motor Right [+] Left [-] Control	(18) 18	(18) 0.35	(18) BN / BK	(18) 2790	(18) II	(18) —
(19) 19	(19) 0.35	(19) GY / BN	(19) 2787	(19) I	(19) —	(19) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(19) 19	(19) 0.35	(19) GY / BN	(19) 2787	(19) II	(19) —
(20) 20	(20) 0.35	(20) VT / RD	(20) 2791	(20) I	(20) —	(20) Left Front Mirror Position Sensor High Reference	(20) 20	(20) 0.35	(20) VT / RD	(20) 2791	(20) II	(20) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(21) 21	(21) 0.35	(21) WH / YE	(21) 2792	(21) I	(21) —	(21) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(21) 21	(21) 0.35	(21) WH / YE	(21) 2792	(21) II	(21) —
(22) 22	(22) 0.35	(22) BK / BN	(22) 673	(22) I	(22) —	(22) Left Outside Rearview Mirror Position Sensor Low Reference	(22) 22	(22) 0.35	(22) BK / BN	(22) 673	(22) II	(22) —
23 - 24	—	—	—	—	—	Not Occupied	23 - 24	—	—	—	—	—
(25) 25	(25) 0.5	(25) RD / VT	(25) 1940	(25) I	(25) —	(25) Battery Positive Voltage	(25) 25	(25) 0.5	(25) RD / VT	(25) 1940	(25) III	(25) —
(26) 26	(26) 0.5	(26) BK	(26) 1150	(26) I	(26) —	(26) Ground	(26) 26	(26) 0.5	(26) BK	(26) 1150	(26) IV	(26) —
(27) 27	(27) 2	(27) YE / VT	(27) 165	(27) I	(27) —	(27) Left Front Window Motor Down Control	(27) 27	(27) 2	(27) YE / VT	(27) 165	(27) IV	(27) —
(28) 28	(28) 2	(28) GN / GY	(28) 164	(28) I	(28) —	(28) Left Front Window Motor Up Control	(28) 28	(28) 2	(28) GN / GY	(28) 164	(28) IV	(28) —
29 - 30	—	—	—	—	—	Not Occupied	29 - 30	—	—	—	—	—

X399 Instrument Panel Wiring Harness to Body Wiring Harness



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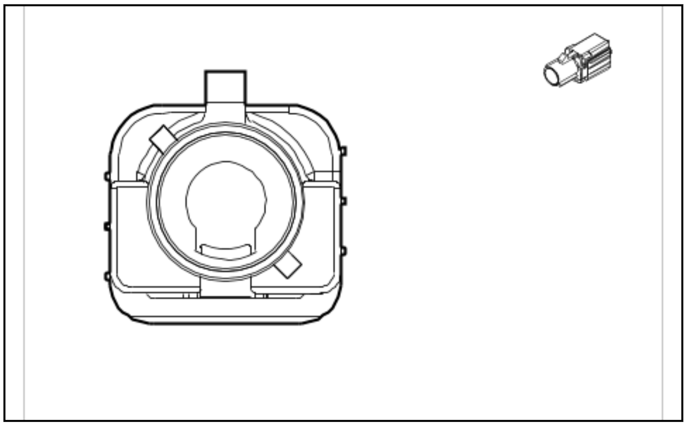


5873701

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516061
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BU)

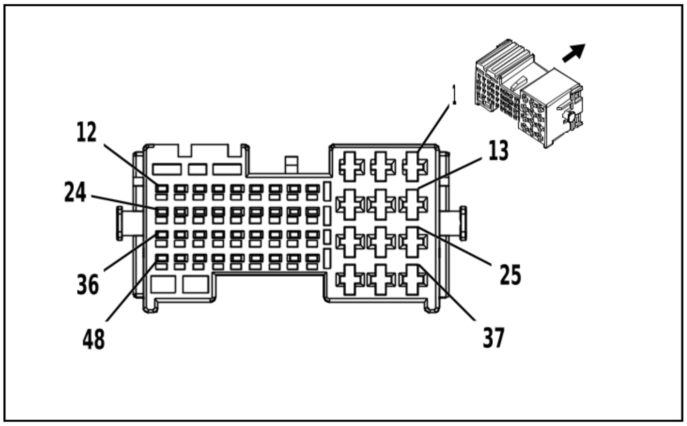
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X399 Instrument Panel Wiring Harness to Body Wiring Harness

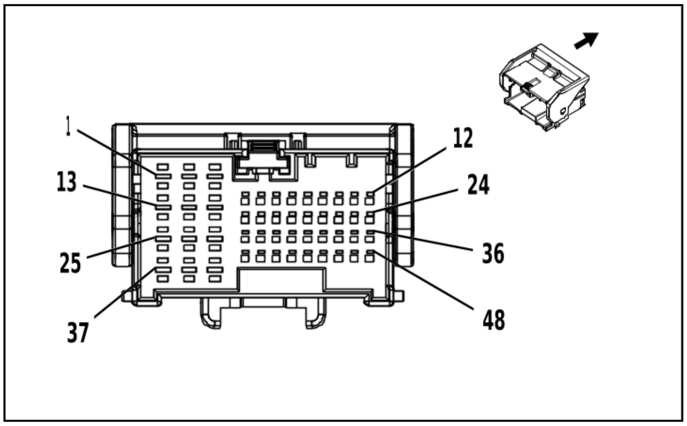
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X400 Instrument Panel Wiring Harness to Body Wiring Harness



3277913

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2109452-2
- Service Connector: 19329739
- Description: 48-Way F 1.2 MCON, 2.8 MCP Series(BK)



3277901

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 5-2109455-2
- Service Connector: 19329740
- Description: 48-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

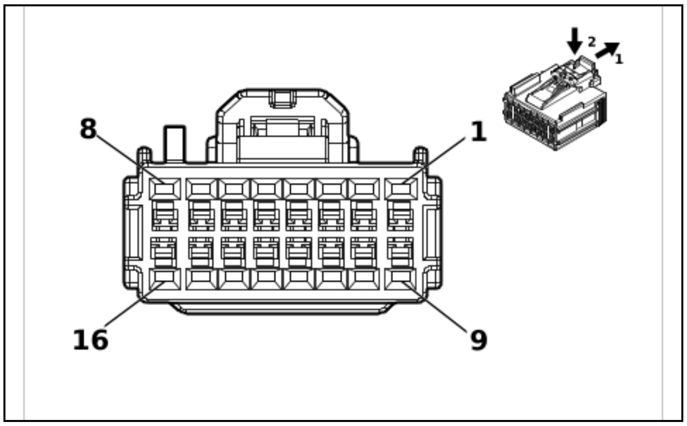
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19329758	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557
III	Service by Cable	J-35616-16 (L-GN)	J-35125-215A
IV	13575574	J-35616-5 (PU)	J-38125-215A
V	86509266	J-35616-13 (BU)	J-38125-215A
VI	Service by Cable	J-35616-13 (BU)	J-35125-215A

X400 Instrument Panel Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BK	(1) 117	(1) II	(1) —	(1) Right Front Speaker [-] Control 1 (1) Right Front Speaker [-] Control 1	(1) 1	(1) 0.75 (1) 0.5	(1) YE / BK (1) BN / BK	(1) 117 (1) 1953	(1) IV (1) IV	(1) UQ3 (1) UQA
(2) 2	(2) 0.5	(2) YE	(2) 200	(2) II	(2) —	(2) Right Front Speaker 1 [+] Control (2) Right Front Speaker 1 [+] Control	(2) 2	(2) 0.75 (2) 0.5	(2) YE (2) WH / YE	(2) 200 (2) 1853	(2) IV (2) IV	(2) UQ3 (2) UQA
(3) 3	(3) 0.5	(3) YE / WH	(3) 1860	(3) II	(3) —	(3) Front Center Speaker [+] Control	(3) 3	(3) 0.5	(3) YE / WH	(3) 1860	(3) IV	(3) —
(4) 4	(4) 0.5	(4) RD / GN	(4) 4440	(4) I	(4) —	(4) Battery Positive Voltage	(4) 4	(4) 0.5	(4) RD / GN	(4) 4440	(4) V	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 1351	(5) I	(5) —	(5) Signal Ground	(5) 5	(5) 0.5	(5) BK / WH	(5) 1351	(5) V	(5) —
(6) 6	(6) 0.35	(6) GN / WH	(6) 4115	(6) I	(6) —	(6) Body Control Module LIN Bus 5	(6) 6	(6) 0.35	(6) GN / WH	(6) 4115	(6) V	(6) —
(7) 7	(7) 0.35	(7) BU	(7) 4987	(7) I	(7) —	(7) AUTOSAR CAN Bus [+] 1 Serial Data	(7) 7	(7) 0.35	(7) BU	(7) 4987	(7) V	(7) —
(8) 8	(8) 0.35	(8) WH	(8) 4986	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 1 Serial Data	(8) 8	(8) 0.35	(8) WH	(8) 4986	(8) V	(8) —
(9) 9	(9) —	(9) —	(9) —	(9) —	(9) —	(9) AUTOSAR CAN Bus [+] 1 Serial Data	(9) 9	(9) 0.35	(9) BU	(9) 4987	(9) V	(9) —
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) AUTOSAR CAN Bus [-] 1 Serial Data	(10) 10	(10) 0.35	(10) WH	(10) 4986	(10) V	(10) —
(11) 11	(11) 0.35	(11) BU / YE	(11) 4979	(11) I	(11) —	(11) AUTOSAR CAN Bus [+] 2 Serial Data	(11) 11	(11) 0.35	(11) BU / YE	(11) 4979	(11) V	(11) —
(12) 12	(12) 0.35	(12) WH	(12) 4978	(12) I	(12) —	(12) AUTOSAR CAN Bus [-] 2 Serial Data	(12) 12	(12) 0.35	(12) WH	(12) 4978	(12) V	(12) —
(13) 13	(13) —	(13) —	(13) —	(13) —	(13) —	(13) Right Rear Speaker [-] Control	(13) 13	(13) 0.75	(13) BU / BK	(13) 115	(13) IV	(13) —
(14) 14	(14) —	(14) —	(14) —	(14) —	(14) —	(14) Right Rear Speaker [+] Control	(14) 14	(14) 0.75	(14) WH	(14) 46	(14) IV	(14) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(15) 15	(15) 0.5	(15) BU / YE	(15) 1960	(15) II	(15) —	(15) Front Center Speaker [-] Control	(15) 15	(15) 0.5	(15) BU / YE	(15) 1960	(15) IV	(15) —
(16) 16	(16) 0.35	(16) BK / GY	(16) 5152	(16) I	(16) —	(16) Voice Recognition Audio [-] Control	(16) 16	(16) 0.35	(16) BK / BN	(16) 654	(16) V	(16) —
(17) 17	(17) 0.35	(17) GY / YE	(17) 5149	(17) I	(17) —	(17) Voice Recognition Audio Signal	(17) 17	(17) 0.35	(17) BU	(17) 655	(17) V	(17) —
(18) 18	(18) 0.35	(18) BARE	(18) 1792	(18) I	(18) —	(18) Low Reference	(18) 18	(18) 0.35	(18) BARE	(18) 1792	(18) V	(18) —
19 - 22	—	—	—	—	—	Not Occupied	19 - 22	—	—	—	—	—
(23) 23	(23) 0.35	(23) BU / BK	(23) 4977	(23) I	(23) —	(23) AUTOSAR CAN Bus [+] 3 Serial Data	(23) 23	(23) 0.5	(23) BU / BK	(23) 4977	(23) V	(23) —
(24) 24	(24) 0.35	(24) WH	(24) 4976	(24) I	(24) —	(24) AUTOSAR CAN Bus [-] 3 Serial Data	(24) 24	(24) 0.5	(24) WH	(24) 4976	(24) V	(24) —
25 - 27	—	—	—	—	—	Not Occupied	25 - 27	—	—	—	—	—
(28) 28	(28) 0.35	(28) BU / BK	(28) 7044	(28) I	(28) —	(28) Microphone [-] Signal	(28) 28	(28) 0.35	(28) BU / BK	(28) 7044	(28) V	(28) —
(29) 29	(29) 0.35	(29) VT / YE	(29) 7043	(29) I	(29) —	(29) Microphone [+] Signal	(29) 29	(29) 0.35	(29) VT / YE	(29) 7043	(29) V	(29) —
30 - 32	—	—	—	—	—	Not Occupied	30 - 32	—	—	—	—	—
(33) 33	(33) 0.1	(33) WH	(33) 8580	(33) III	(33) —	(33) Automotive Audio Bus A2B Serial Data 1 [+]	(33) 33	(33) 0.35	(33) WH	(33) 8580	(33) VI	(33) —
(34) 34	(34) 0.1	(34) GN	(34) 8579	(34) III	(34) —	(34) Automotive Audio Bus A2B Serial Data 1 [-]	(34) 34	(34) 0.35	(34) GN	(34) 8579	(34) VI	(34) —
35 - 36	—	—	—	—	—	Not Occupied	35 - 36	—	—	—	—	—
(37) 37	(37) 2.5	(37) BK	(37) 4250	(37) II	(37) —	(37) Ground	(37) 37	(37) 2.5	(37) BK	(37) 4250	(37) IV	(37) —
38	—	—	—	—	—	Not Occupied	38	—	—	—	—	—
(39) 39	(39) 0.75	(39) RD / GN	(39) 1840	(39) II	(39) —	(39) Battery Positive Voltage	(39) 39	(39) 1.5	(39) RD / GN	(39) 1840	(39) IV	(39) —
40 - 48	—	—	—	—	—	Not Occupied	40 - 48	—	—	—	—	—

X401 Roof Wiring Harness to Body Wiring Harness



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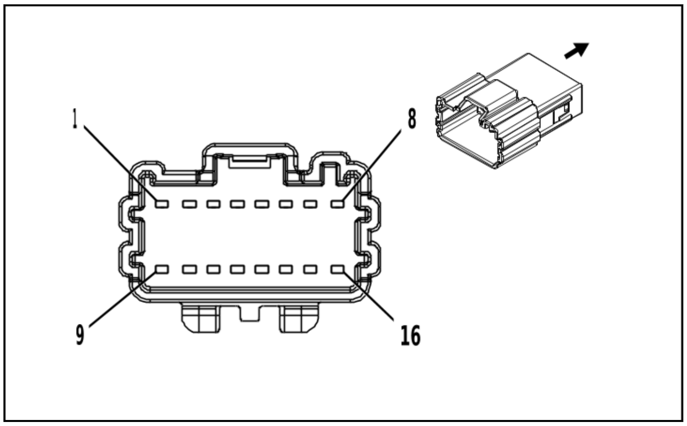


4218594

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-9013
- Service Connector: 13541573
- Description: 16-Way F 1.2 MCON Series(GY)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8829
- Service Connector: 13527235
- Description: 16-Way M 1.2 Series(GY)

Terminal Part Information

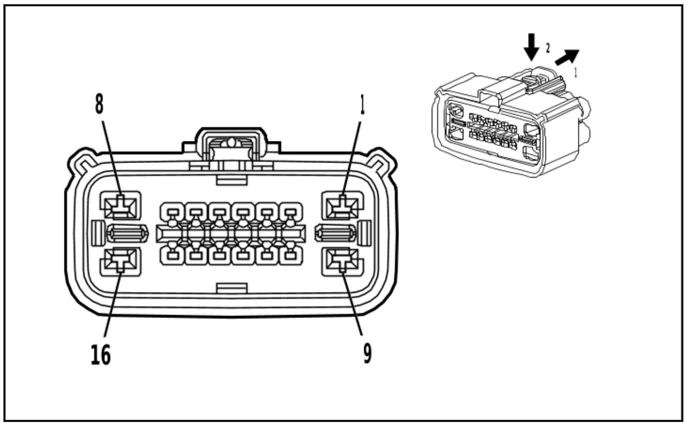
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	84616651	J-35616-13 (BU)	J-38125-215A

X401 Roof Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 4250	(1) I	(1) —	(1) Ground	(1) 1	(1) 0.75	(1) BK	(1) 4250	(1) II	(1) —
(2) 2	(2) 0.5 (2) 0.35	(2) WH / BN (2) WH / BN	(2) 6815 (2) 6815	(2) I (2) I	(2) C75+ DEG (2) - C75- DEG	(2) Inadvertent Load Control (2) Inadvertent Load Control	(2) 2	(2) 0.5	(2) WH / BN	(2) 6815	(2) II	(2) —
(3) 3	(3) 0.5	(3) GY	(3) 156	(3) I	(3) —	(3) Courtesy Lamp Switch Signal	(3) 3	(3) 0.5	(3) GTY	(3) 156	(3) II	(3) —
(4) 4	(4) 0.35	(4) GY	(4) 156	(4) I	(4) —	(4) Courtesy Lamp Switch Signal	(4) 4	(4) 0.35	(4) GY	(4) 156	(4) II	(4) —
(5) 5	(5) 0.35	(5) GY / GN	(5) 328	(5) I	(5) —	(5) Interior Lamp Defeat Switch Signal	(5) 5	(5) 0.35	(5) GY / GN	(5) 328	(5) II	(5) —
6 - 10	—	—	—	—	—	Not Occupied	6 - 10	—	—	—	—	—
(11) 11	(11) 0.35	(11) YE	(11) 6817	(11) I	(11) —	(11) LED Backlight Dimming Control 1	(11) 11	(11) 0.35	(11) YE	(11) 6817	(11) II	(11) —
(12) 12	(12) 0.35	(12) GN / WH	(12) 2854	(12) I	(12) —	(12) Body Control Module LIN Bus 8	(12) 12	(12) 0.35	(12) GN / WH	(12) 2854	(12) II	(12) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(13) 13	(13) 0.35	(13) GN / YE	(13) 2862	(13) I	(13) —	(13) Body Control Module LIN Bus 16	(13) 13	(13) 0.35	(13) GN / YE	(13) 2862	(13) II	(13) —
14 - 16	—	—	—	—	—	Not Occupied	14 - 16	—	—	—	—	—

X402A Front Seat Wiring Harness - Passenger to Body Wiring Harness



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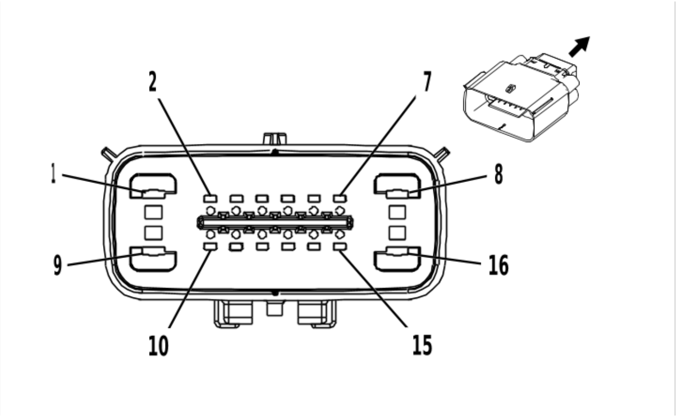


2373686

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 34985-2161
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(YE)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 34986-1605
- Service Connector: 19332830
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(YE)

Terminal Part Information

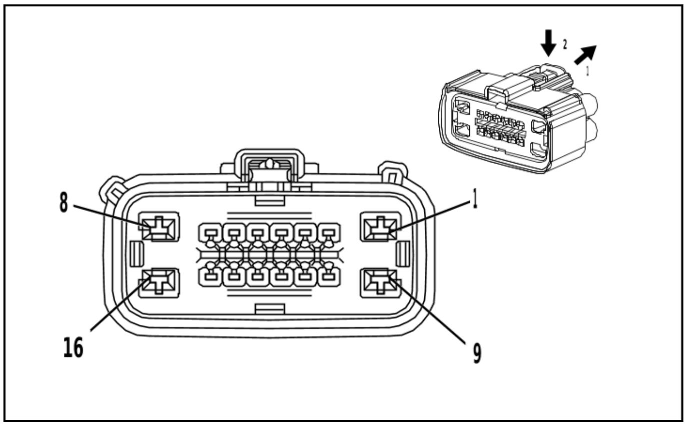
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	Not required	No Tool Required	No Tool Required
IV	19366658	J-35616-5 (PU)	J-38125-12A
V	86800300	J-35616-3 (GY)	J-38125-217

X402A Front Seat Wiring Harness - Passenger to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5 (1) 1.5	(1) BK (1) BK	(1) 4250 (1) 4250	(1) II (1) II	(1) A7J/(KA1+KU9) (1) KA1-KU9- A7J	(1) Ground (1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 4250	(1) IV	(1) —
(2) 2	(2) 0.5	(2) OG / GY	(2) 4956	(2) III	(2) —	(2) Passenger Seat Back Air Bag High Control	(2) 2	(2) 0.5	(2) OG / GY	(2) 4956	(2) V	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BU / OG	(3) 4957	(3) III	(3) —	(3) Passenger Seat Back Air Bag Low Control	(3) 3	(3) 0.5	(3) BU / OG	(3) 4957	(3) V	(3) —
(4) 4	(4) 0.5	(4) BK / WH	(4) 1351	(4) I	(4) —	(4) Signal Ground	(4) 4	(4) 0.5	(4) BK / WH	(4) 1351	(4) V	(4) —
(5) 5	(5) 0.5	(5) GY / OG	(5) 3946	(5) I	(5) —	(5) Passenger Automatic Locking Retractor Switch Low Reference	(5) 5	(5) 0.5	(5) GY / OG	(5) 3946	(5) V	(5) —
(6) 6	(6) 0.5	(6) OG / BN	(6) 3947	(6) I	(6) —	(6) Passenger Automatic Locking Retractor Switch Signal	(6) 6	(6) 0.5	(6) OG / BN	(6) 3947	(6) V	(6) —
(7) 7	(7) 0.5	(7) RD / GN	(7) 4440	(7) I	(7) —	(7) Battery Positive Voltage	(7) 7	(7) 0.5	(7) RD / GN	(7) 4440	(7) V	(7) —
(8) 8	(8) —	(8) —	(8) —	(8) —	(8) —	(8) Battery Positive Voltage	(8) 8	(8) 2.5	(8) RD / YE	(8) 4340	(8) IV	(8) —
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) 0.5	(10) OG / VT	(10) 1362	(10) I	(10) —	(10) Passenger Seat Belt Switch Signal	(10) 10	(10) 0.5	(10) OG / VT	(10) 1362	(10) V	(10) —
(11) 11	(11) 0.5	(11) BK / OG	(11) 1363	(11) I	(11) —	(11) Driver Seat Belt Switch Low Reference	(11) 11	(11) 0.5	(11) BK / OG	(11) 1363	(11) V	(11) —
(12) 12	(12) 0.5	(12) WH	(12) 4986	(12) I	(12) —	(12) AUTOSAR CAN Bus [-] 1 Serial Data	(12) 12	(12) 0.35	(12) WH	(12) 4986	(12) V	(12) —
(13) 13	(13) 0.5	(13) BU	(13) 4987	(13) I	(13) —	(13) AUTOSAR CAN Bus [+] 1 Serial Data	(13) 13	(13) 0.35	(13) BU	(13) 4987	(13) V	(13) —
(14) 14	(14) 0.5	(14) WH	(14) 4986	(14) I	(14) —	(14) AUTOSAR CAN Bus [-] 1 Serial Data	(14) 14	(14) 0.35	(14) WH	(14) 4986	(14) V	(14) —
(15) 15	(15) 0.5	(15) BU	(15) 4987	(15) I	(15) —	(15) AUTOSAR CAN Bus [+] 1 Serial Data	(15) 15	(15) 0.35	(15) BU	(15) 4987	(15) V	(15) —
(16) 16	(16) —	(16) —	(16) —	(16) —	(16) —	(16) Battery Positive Voltage	(16) 16	(16) 0.75	(16) RD / BN	(16) 4240	(16) IV	(16) —

X402B Front Seat Wiring Harness - Passenger to Body Wiring Harness



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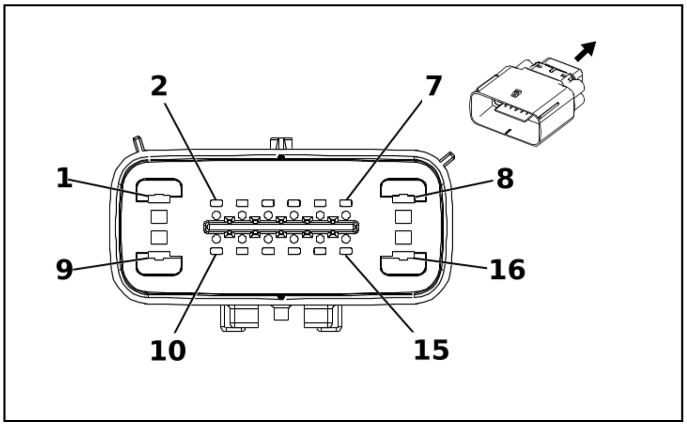


4209017

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 34985-1607
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(GY)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 34986-8006
- Service Connector: 19352214
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(L-GY)

Terminal Part Information

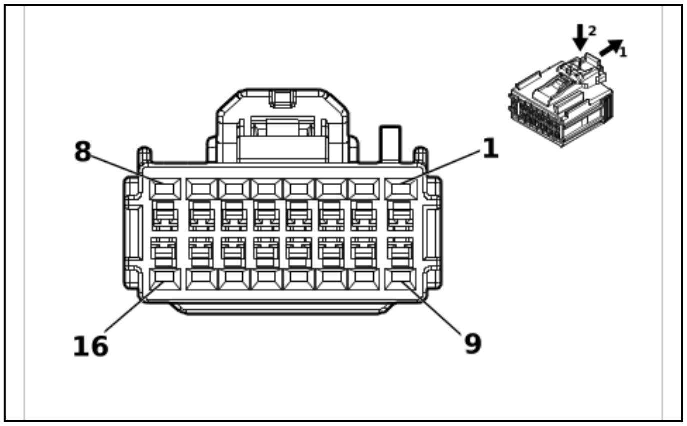
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	86800300	J-35616-3 (GY)	J-38125-217

X402B Front Seat Wiring Harness - Passenger to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 0.75	(2) BN / VT	(2) 2077	(2) II	(2) —	(2) Driver Seat Heating Element Control	(2) 2	(2) 0.75	(2) BN / VT	(2) 2077	(2) III	(2) —
(3) 3	(3) 0.75	(3) BN / BK	(3) 2078	(3) II	(3) —	(3) Driver Seat Heating Element Low Reference	(3) 3	(3) 0.75	(3) BN / BK	(3) 2078	(3) III	(3) —
(4) 4	(4) 0.5	(4) YE / GY	(4) 2079	(4) I	(4) —	(4) Driver Seat Heating Temperature Sensor Signal	(4) 4	(4) 0.5	(4) YE / GY	(4) 2079	(4) III	(4) —
(5) 5	(5) 0.5	(5) BK / YE	(5) 2080	(5) I	(5) —	(5) Driver Heated Seat Thermistor Low Reference	(5) 5	(5) 0.5	(5) BK / YE	(5) 2080	(5) III	(5) —
(6) 6	(6) 0.5	(6) BU	(6) 2425	(6) I	(6) —	(6) Driver Seat Back Heating Temperature Sensor Signal	(6) 6	(6) 0.5	(6) BU	(6) 2425	(6) III	(6) —
7 - 9	—	—	—	—	—	Not Occupied	7 - 9	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(10) 10	(10) 0.5	(10) GN / VT	(10) 2857	(10) I	(10) —	(10) Body Control Module LIN Bus 11	(10) 10	(10) 0.35	(10) GN / VT	(10) 2857	(10) III	(10) —
(11) 11	(11) 0.75	(11) RD / BU	(11) 4540	(11) II	(11) —	(11) Battery Positive Voltage	(11) 11	(11) 0.75	(11) RD / BU	(11) 4540	(11) III	(11) —
(12) 12	(12) 0.75	(12) RD / VT	(12) 4640	(12) II	(12) —	(12) Battery Positive Voltage	(12) 12	(12) 0.75	(12) RD / VT	(12) 4640	(12) III	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—
(14) 14	(14) 0.5	(14) GN / VT	(14) 5906	(14) I	(14) —	(14) Driver Seat Blower Motor Control 1	(14) 14	(14) 0.5	(14) GN / VT	(14) 5906	(14) III	(14) —
(15) 15	(15) 0.5	(15) VT / GN	(15) 839	(15) I	(15) —	(15) Run/Crank Ignition 1 Voltage	(15) 15	(15) 0.5	(15) VT / GN	(15) 839	(15) III	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—

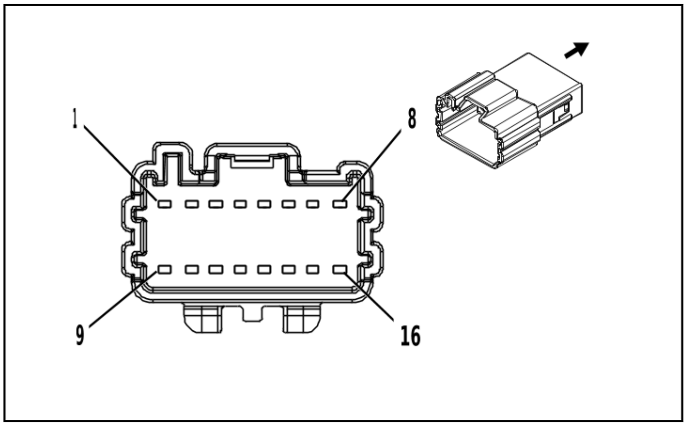
X402C Roof Wiring Harness to Body Wiring Harness



6074391

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-9012
- Service Connector: 13541574
- Description: 16-Way F 1.2 MCON Series(BK)



4223086

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8828
- Service Connector: 13526848
- Description: 16-Way M 1.2 Series(BK)

Terminal Part Information

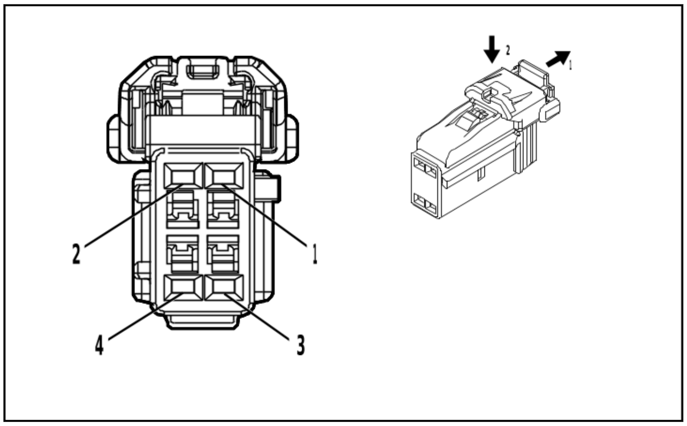
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	84616651	J-35616-13 (BU)	J-38125-215A

X402C Roof Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35 (1) 0.5	(1) BK / WH (1) BK / WH	(1) 1851 (1) 1851	(1) I (1) I	(1) - (DD8) - (CJ2) (1) (DD8/ CJ2)	(1) Signal Ground (1) Signal Ground	(1) 1	(1) 0.5	(1) BK / WH	(1) 451	(1) II	(1) —
(2) 2	(2) 0.35	(2) RD / YE	(2) 240	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 0.35	(2) RD / YE	(2) 240	(2) II	(2) —
(3) 3	(3) 0.35	(3) RD / VT	(3) 4040	(3) I	(3) —	(3) Battery Positive Voltage	(3) 3	(3) 0.35	(3) RD / VT	(3) 4040	(3) II	(3) —
(4) 4	(4) 0.35	(4) BU	(4) 2307	(4) I	(4) —	(4) Passenger Air Bag On Indicator Control	(4) 4	(4) 0.35	(4) BU	(4) 2307	(4) II	(4) —
(5) 5	(5) 0.35	(5) GN	(5) 2308	(5) I	(5) —	(5) Passenger Air Bag Off Indicator Control	(5) 5	(5) 0.35	(5) GN	(5) 2308	(5) II	(5) —
(6) 6	(6) 0.35 (6) 0.35	(6) GN (6) VT / WH	(6) 3118 (6) 5234	(6) I (6) I	(6) C91 (6) - C91	(6) Roof Rail Air Bag Disable Indicator Control (6) Passenger Seat Belt Indicator Control	(6) 6	(6) 0.35 (6) 0.35	(6) GN (6) VT / WH	(6) 3118 (6) 5234	(6) II (6) II	(6) C91 (6) - C91
(7) 7	(7) 0.35	(7) GN / WH	(7) 4115	(7) I	(7) —	(7) Body Control Module LIN Bus 5	(7) 7	(7) 0.35	(7) GN / WH	(7) 4115	(7) II	(7) —
(8) 8	(8) 0.35	(8) GN / WH	(8) 24	(8) I	(8) —	(8) Backup Lamp Control	(8) 8	(8) 0.35	(8) GN / WH	(8) 24	(8) II	(8) —
(9) 9	(9) 0.35 (9) 0.35	(9) VT / GN (9) VT / WH	(9) 39 (9) 1139	(9) I (9) I	(9) DD8 (9) - DD8	(9) Run/ Crank Ignition 1 Voltage (9) Run/ Crank Ignition 1 Voltage	(9) 9	(9) 0.5	(9) VT / WH	(9) 1139	(9) II	(9) —
(10) 10	(10) 0.35	(10) BU / BK	(10) 7044	(10) I	(10) —	(10) Microphone [-] Signal	(10) 10	(10) 0.35	(10) BU / BK	(10) 7044	(10) II	(10) —
(11) 11	(11) 0.35	(11) VT / YE	(11) 7043	(11) I	(11) —	(11) Microphone [+] Signal	(11) 11	(11) 0.35	(11) VT / YE	(11) 7043	(11) II	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 0.35	(13) BU / YE	(13) 4979	(13) I	(13) —	(13) AUTOSAR CAN Bus [+] 2 Serial Data	(13) 13	(13) 0.5	(13) BU / YE	(13) 4979	(13) II	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4978	(14) I	(14) —	(14) AUTOSAR CAN Bus [-] 2 Serial Data	(14) 14	(14) 0.5	(14) WH	(14) 4978	(14) II	(14) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(15) 15	(15) 0.35	(15) BU / YE	(15) 4979	(15) I	(15) —	(15) AUTOSAR CAN Bus [+] 2 Serial Data	(15) 15	(15) 0.35	(15) BU / YE	(15) 4979	(15) II	(15) —
(16) 16	(16) 0.35	(16) WH	(16) 4978	(16) I	(16) —	(16) AUTOSAR CAN Bus [-] 2 Serial Data	(16) 16	(16) 0.35	(16) WH	(16) 4978	(16) II	(16) —

X402D Inside Air Moisture and Windshield Temperature Sensor Jumper to Roof Wiring Harness (CJ2)



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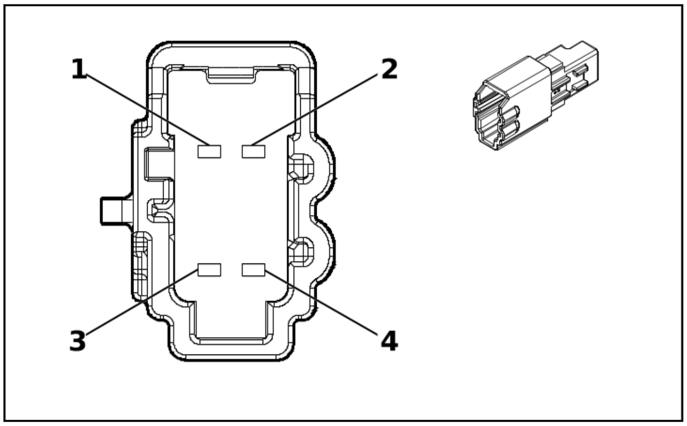


5360963

Connector Part Information

- Harness Type: Inside Air Moisture and Windshield Temperature Sensor Jumper
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F (BK)

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: 84847258
- Description: 4-Way M 1.2 MCON Series(BK)

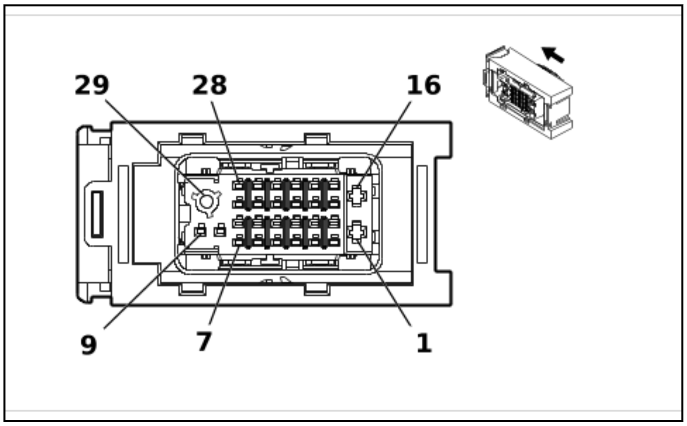
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X402D Inside Air Moisture and Windshield Temperature Sensor Jumper to Roof Wiring Harness (CJ2)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / GN	(1) 39	(1) I	(1) —	(1) Run/ Crank Ignition 1 Voltage	(1) 1	(1) 0.35	(1) VT / GN	(1) 39	(1) II	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 1851	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.35	(2) BK / WH	(2) 1851	(2) II	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 4115	(3) I	(3) —	(3) Body Control Module LIN Bus 5	(3) 3	(3) 0.35	(3) GN / WH	(3) 4115	(3) II	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—

X404 Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger



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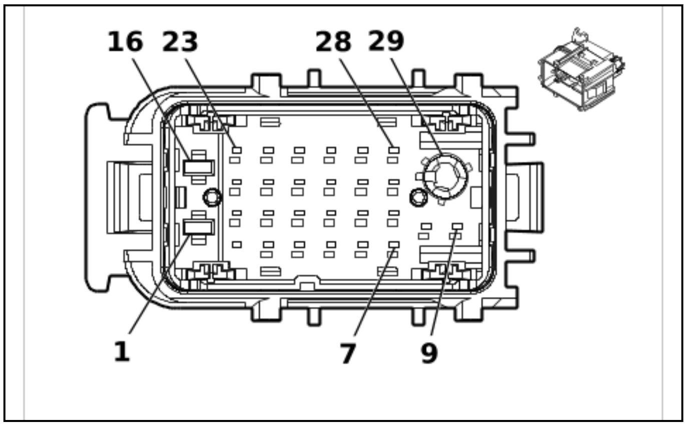


6154847

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35383762
- Service Connector: 85741556
- Description: 29-Way F 1.2, 2.8 CTS Coaxial Series, Sealed(YE)

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 29-Way M (YE)

Terminal Part Information

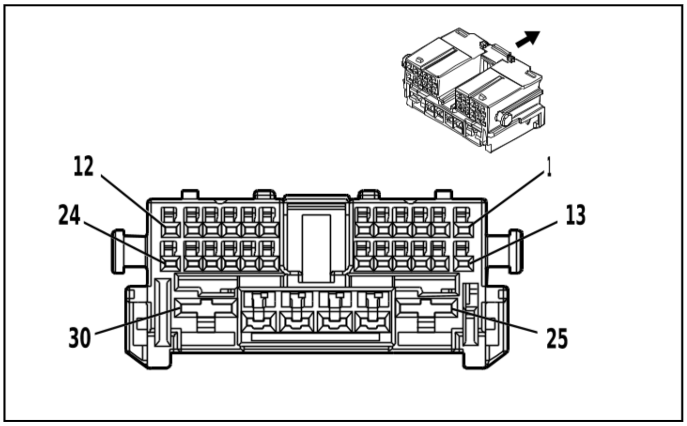
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	85741557	J-35616-12 (BU)	J-38125-215A
III	Service by Cable	No Tool Required	No Tool Required
IV	Not required	No Tool Required	No Tool Required
V	Service by Cable	No Tool Required	No Tool Required

X404 Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 4250	(1) I	(1) —	(1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 1250	(1) IV	(1) —
2 - 6	—	—	—	—	—	Not Occupied	2 - 6	—	—	—	—	—
(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) II	(7) —	(7) Body Control Module LIN Bus 3	(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) IV	(7) —
8 - 10	—	—	—	—	—	Not Occupied	8 - 10	—	—	—	—	—
(11) 11	(11) 0.5	(11) BN / OG	(11) 2134	(11) II	(11) —	(11) Right Front Side Impact Sensor Signal	(11) 11	(11) 0.5	(11) BN / OG	(11) 2134	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BK / OG	(12) 6629	(12) II	(12) —	(12) Right Front Side Impact Sensor Low Reference	(12) 12	(12) 0.5	(12) BK / OG	(12) 6629	(12) IV	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(14) 14	(14) 0.35	(14) GN / BK	(14) 4304	(14) II	(14) —	(14) Passive Entry Right Antenna Signal Low	(14) 14	(14) 0.35	(14) GN / BK	(14) 4304	(14) IV	(14) —
(15) 15	(15) 0.35	(15) GN / YE	(15) 4303	(15) II	(15) —	(15) Passive Entry Right Antenna Signal High	(15) 15	(15) 0.35	(15) GN / YE	(15) 4303	(15) IV	(15) —
(16) 16	(16) 2.5	(16) RD / GY	(16) 3540	(16) I	(16) —	(16) Battery Positive Voltage	(16) 16	(16) 2.5	(16) RD / GY	(16) 3540	(16) IV	(16) —
17 - 19	—	—	—	—	—	Not Occupied	17 - 19	—	—	—	—	—
(20) 20	(20) 0.35	(20) GY / VT	(20) 2676	(20) II	(20) —	(20) Right Front Door Exterior Switch Unlock Signal	(20) 20	(20) 0.35	(20) GY / VT	(20) 2676	(20) IV	(20) —
21 - 22	—	—	—	—	—	Not Occupied	21 - 22	—	—	—	—	—
(23) 23	(23) 0.75	(23) GY / BK	(23) 2680	(23) II	(23) —	(23) Lock Actuators Unlock Control 2	(23) 23	(23) 0.75	(23) GY / BK	(23) 2680	(23) IV	(23) —
(24) 24	(24) 0.75	(24) YE / GN	(24) 2682	(24) II	(24) —	(24) Right Front Door Lock Actuator Lock Control	(24) 24	(24) 0.75	(24) YE / GN	(24) 2682	(24) IV	(24) —
25 - 26	—	—	—	—	—	Not Occupied	25 - 26	—	—	—	—	—
(27) 27	(27) 0.75 (27) 1	(27) YE (27) YE	(27) 200 (27) 200	(27) II (27) II	(27) UQ3 (27) UQA	(27) Right Front Speaker 1 [+] Control (27) Right Front Speaker 1 [+] Control	(27) 27	(27) 0.75 (27) 1	(27) YE (27) YE	(27) 200 (27) 200	(27) IV (27) IV	(27) UQ3 (27) UQA
(28) 28	(28) 0.75 (28) 1	(28) YE / BK (28) YE / BK	(28) 117 (28) 117	(28) II (28) II	(28) UQ3 (28) UQA	(28) Right Front Speaker [-] Control 1 (28) Right Front Speaker [-] Control 1	(28) 28	(28) 0.75 (28) 1	(28) YE / BK (28) YE / BK	(28) 117 (28) 117	(28) IV (28) IV	(28) UQ3 (28) UQA
(29) 29	(29) 0	(29) Coax Cable	(29) 4724	(29) III	(29) —	(29) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(29) 29	(29) 0	(29) Coax Cable	(29) 4724	(29) V	(29) —

X494 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right



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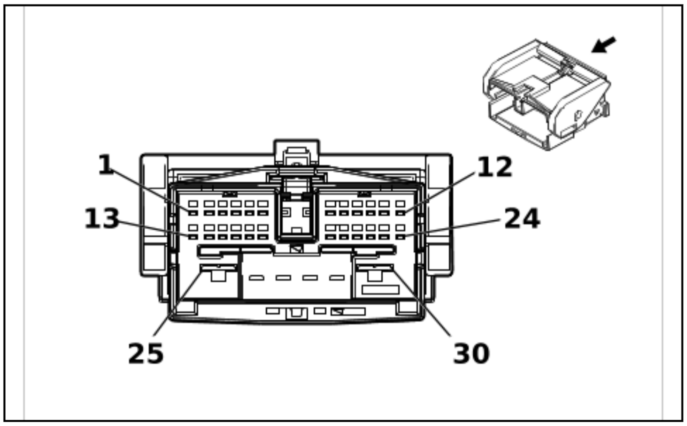


4249201

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 7298-4329-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 7297-4331-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way M 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required
III	Not required	J-35616-43 (RD)	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required

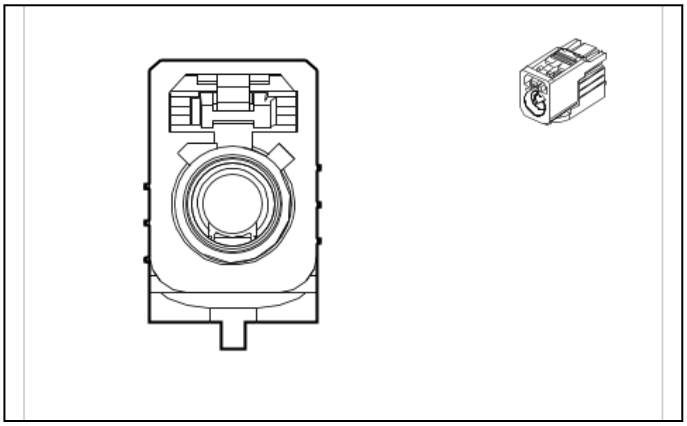
X494 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / VT	(1) 4638	(1) I	(1) —	(1) LED Backlight Dimming Control Right Front Door	(1) 1	(1) 0.35	(1) GY / VT	(1) 4638	(1) II	(1) —
(2) 2	(2) 0.35	(2) YE / BU	(2) 4245	(2) I	(2) —	(2) Right Front Door Lock Indicator Control	(2) 2	(2) 0.35	(2) YE / BU	(2) 4245	(2) II	(2) —
(3) 3	(3) 0.35	(3) VT	(3) 4259	(3) I	(3) —	(3) Right Front Door Lock Status Signal	(3) 3	(3) 0.35	(3) VT	(3) 4259	(3) II	(3) —
(4) 4	(4) 0.35	(4) YE / VT	(4) 2773	(4) I	(4) —	(4) Right Front Door Lock Switch Lock Control	(4) 4	(4) 0.35	(4) YE / VT	(4) 2773	(4) II	(4) —

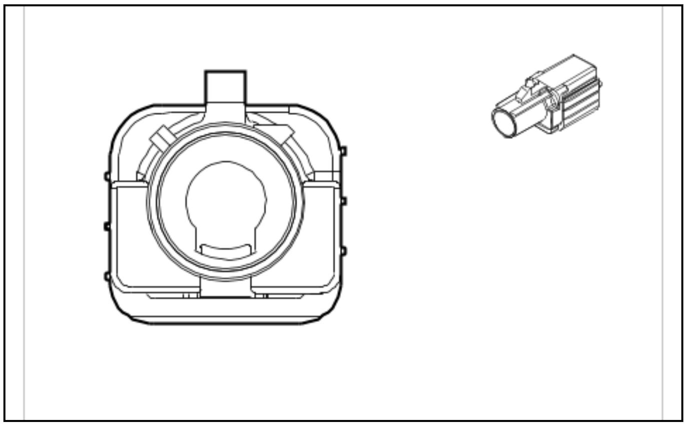
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(5) 5	(5) 0.35	(5) BN / VT	(5) 2774	(5) I	(5) —	(5) Right Front Door Lock Switch Unlock Control	(5) 5	(5) 0.35	(5) BN / VT	(5) 2774	(5) II	(5) —
(6) 6	(6) 0.35	(6) GY	(6) 1761	(6) I	(6) —	(6) Right Side Object Detection LED Control	(6) 6	(6) 0.35	(6) GY	(6) 1761	(6) II	(6) —
(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) I	(7) —	(7) Body Control Module LIN Bus 3	(7) 7	(7) 0.35	(7) GN / YE	(7) 6134	(7) II	(7) —
(8) 8	(8) 0.35	(8) GY	(8) 746	(8) I	(8) —	(8) Right Front Door Ajar Switch Signal	(8) 8	(8) 0.35	(8) GY	(8) 746	(8) II	(8) —
9 - 12	—	—	—	—	—	Not Occupied	9 - 12	—	—	—	—	—
(13) 13	(13) 0.5	(13) BN / VT	(13) 607	(13) I	(13) —	(13) Right Outside Rearview Mirror Heater Control	(13) 13	(13) 0.5	(13) BN / VT	(13) 607	(13) II	(13) —
14 - 15	—	—	—	—	—	Not Occupied	14 - 15	—	—	—	—	—
(16) 16	(16) 0.35	(16) YE / VT	(16) 2796	(16) I	(16) —	(16) Right Front Mirror Motor Up [+] Down [-] Control	(16) 16	(16) 0.35	(16) YE / VT	(16) 2796	(16) II	(16) —
(17) 17	(17) 0.35	(17) WH	(17) 2797	(17) I	(17) —	(17) Right Front Mirror Motor Common Control	(17) 17	(17) 0.35	(17) WH	(17) 2797	(17) II	(17) —
(18) 18	(18) 0.35	(18) GN / BK	(18) 2798	(18) I	(18) —	(18) Right Front Mirror Motor Right [+] Left [-] Control	(18) 18	(18) 0.35	(18) GN / BK	(18) 2798	(18) II	(18) —
(19) 19	(19) 0.35	(19) BU / YE	(19) 2795	(19) I	(19) —	(19) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(19) 19	(19) 0.35	(19) BU / YE	(19) 2795	(19) II	(19) —
(20) 20	(20) 0.35	(20) YE / RD	(20) 2799	(20) I	(20) —	(20) Right Front Mirror Position Sensor High Reference	(20) 20	(20) 0.35	(20) YE / RD	(20) 2799	(20) II	(20) —
(21) 21	(21) 0.35	(21) VT / WH	(21) 2800	(21) I	(21) —	(21) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(21) 21	(21) 0.35	(21) VT / WH	(21) 2800	(21) II	(21) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(22) 22	(22) 0.35	(22) BK / GN	(22) 675	(22) I	(22) —	(22) Right Outside Rearview Mirror Position Sensor Low Reference	(22) 22	(22) 0.35	(22) BK / GN	(22) 675	(22) II	(22) —
23 - 24	—	—	—	—	—	Not Occupied	23 - 24	—	—	—	—	—
(25) 25	(25) 2.5	(25) RD / GY	(25) 3540	(25) I	(25) —	(25) Battery Positive Voltage	(25) 25	(25) 2.5	(25) RD / GY	(25) 3540	(25) III	(25) —
(26) 26	(26) 2.5	(26) BK	(26) 1250	(26) I	(26) —	(26) Ground	(26) 26	(26) 2.5	(26) BK	(26) 1250	(26) IV	(26) —
(27) 27	(27) 2	(27) YE / BU	(27) 667	(27) I	(27) —	(27) Right Front Window Motor Down Control	(27) 27	(27) 2	(27) YE / BU	(27) 667	(27) IV	(27) —
(28) 28	(28) 2	(28) GN / GY	(28) 666	(28) I	(28) —	(28) Right Front Window Motor Up Control	(28) 28	(28) 2	(28) GN / GY	(28) 666	(28) IV	(28) —
29 - 30	—	—	—	—	—	Not Occupied	29 - 30	—	—	—	—	—

X499A Body Wiring Harness to Instrument Panel Wiring Harness



Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516408
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)



Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M (BK)

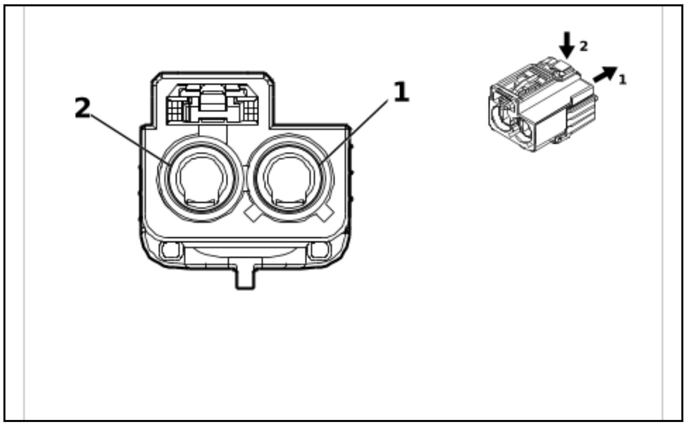
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X499A Body Wiring Harness to Instrument Panel Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	(AM/FM) Antenna RF Signal	—	—	Coax Cable	—	I	—

X499B Body Wiring Harness to Instrument Panel Wiring Harness



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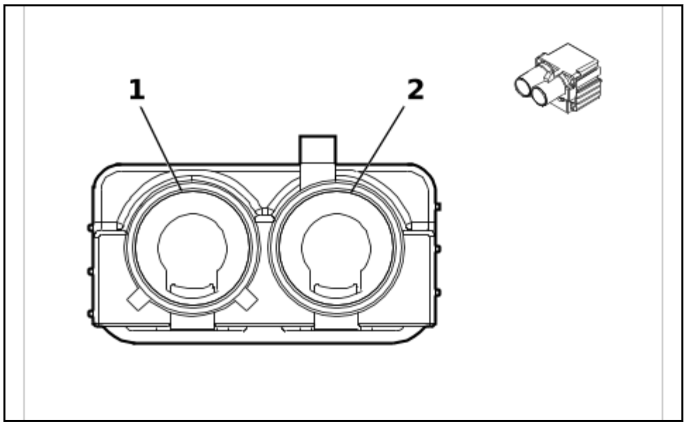


5987873

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516431
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way M (CU)

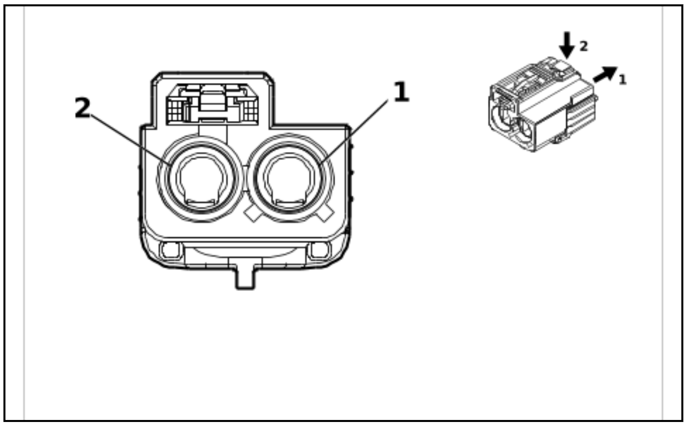
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X499B Body Wiring Harness to Instrument Panel Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	(DAB/DMB) Coaxial Antenna DAB Signal	—	—	Coax Cable	—	I	—

X499C Body Wiring Harness to Instrument Panel Wiring Harness (U2K)



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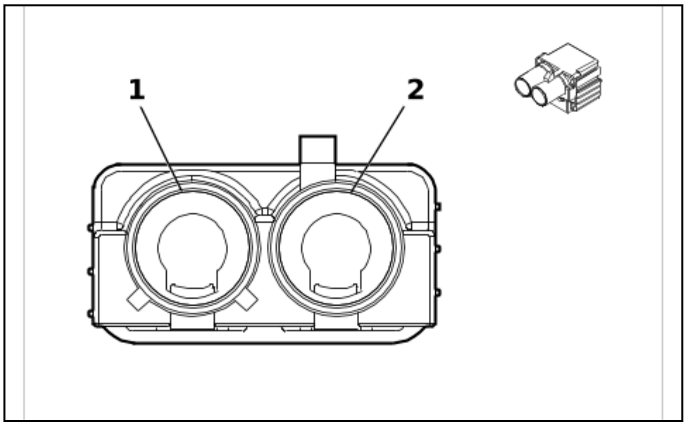


5987873

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13516431
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13516098
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way M Coax Type(CU)

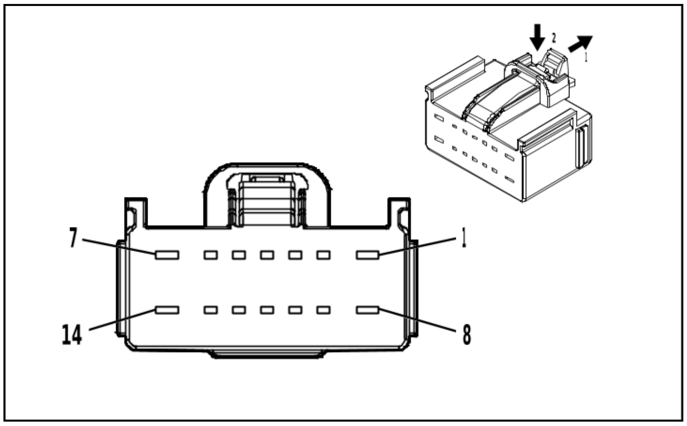
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X499C Body Wiring Harness to Instrument Panel Wiring Harness (U2K)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	WiFi Antenna Coaxial Signal	—	—	Coax Cable	—	I	—

X500 Roof Wiring Harness to Body Wiring Harness



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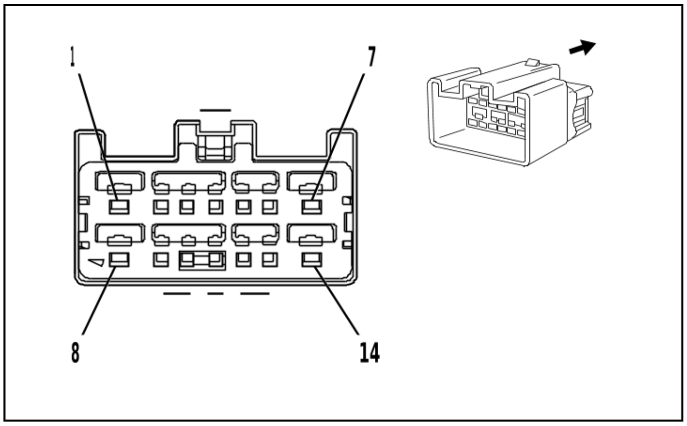


1283905

Connector Part Information

- Harness Type: Roof Wiring Harness
- OEM Connector: 7289-7630-40
- Service Connector: 13513605
- Description: 14-Way F 1.5, 2.8 YESC Series(GY)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7282-6447-40
- Service Connector: 88956523
- Description: 14-Way M 1.5, 2.8 YESC Series(L-GY)

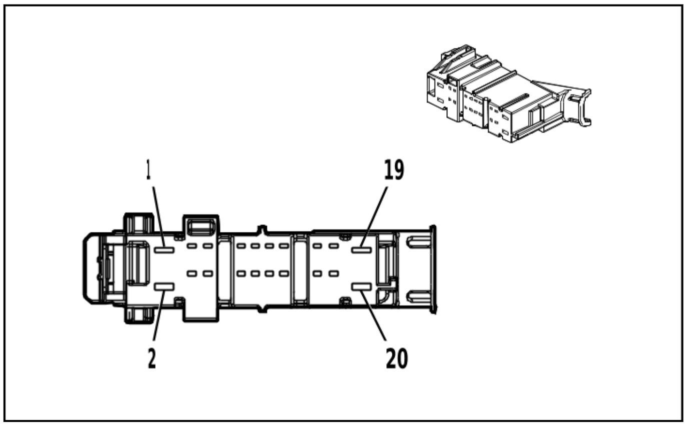
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332534	J-35616-2A (GY)	J-38125-557
II	85544080	J-35616-4A (PU)	J-38125-11A
III	13578908	J-35616-5 (PU)	J-38125-11A
IV	85544421	J-35616-3 (GY)	J-38125-215A

X500 Roof Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) RD / YE	(1) 2340	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 1.5	(1) RD / YE	(1) 2340	(1) III	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.35	(3) GN / BK	(3) 2515	(3) I	(3) —	(3) Telematics Switch Supply Voltage	(3) 3	(3) 0.35	(3) GN / BK	(3) 2515	(3) IV	(3) —
(4) 4	(4) 0.35	(4) GN / WH	(4) 2514	(4) I	(4) —	(4) Telematics Switch Signal	(4) 4	(4) 0.35	(4) GN / WH	(4) 2514	(4) IV	(4) —
(5) 5	(5) 0.35	(5) YE / VT	(5) 2516	(5) I	(5) —	(5) Telematics Switch Green LED Indicator Control	(5) 5	(5) 0.35	(5) YE / VT	(5) 2516	(5) IV	(5) —
(6) 6	(6) 0.35	(6) BN / WH	(6) 2517	(6) I	(6) —	(6) Telematics Switch Red LED Indicator Control	(6) 6	(6) 0.35	(6) BN / WH	(6) 2517	(6) IV	(6) —
7	—	—	—	—	—	Not Occupied	7	—	—	—	—	—
(8) 8	(8) 1.5	(8) BK	(8) 1850	(8) II	(8) —	(8) Ground	(8) 8	(8) 1.5	(8) BK	(8) 4250	(8) III	(8) —
(9) 9	(9) 0.5 (9) 0.35	(9) BK / WH (9) BK / WH	(9) 451 (9) 451	(9) I (9) I	(9) (UE1/UER) (9) - (UE1/UER)	(9) Signal Ground (9) Signal Ground	(9) 9	(9) 0.5	(9) BK / WH	(9) 451	(9) IV	(9) —
(10) 10	(10) 0.35	(10) RD / VT	(10) 1640	(10) I	(10) —	(10) Battery Positive Voltage	(10) 10	(10) 0.35	(10) RD / VT	(10) 1640	(10) IV	(10) —
11	—	—	—	—	—	Not Occupied	11	—	—	—	—	—
(12) 12	(12) 0.35	(12) BK / BN	(12) 654	(12) I	(12) —	(12) Cellular Telephone Microphone Low Reference	(12) 12	(12) 0.35	(12) BK / BN	(12) 654	(12) IV	(12) —
(13) 13	(13) 0.35	(13) BU	(13) 655	(13) I	(13) —	(13) Cellular Telephone Microphone Signal	(13) 13	(13) 0.35	(13) BU	(13) 655	(13) IV	(13) —
14	—	—	—	—	—	Not Occupied	14	—	—	—	—	—

X503 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness



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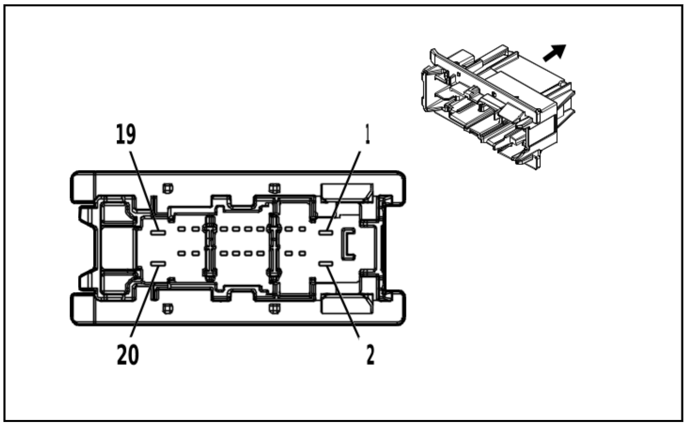


4663657

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

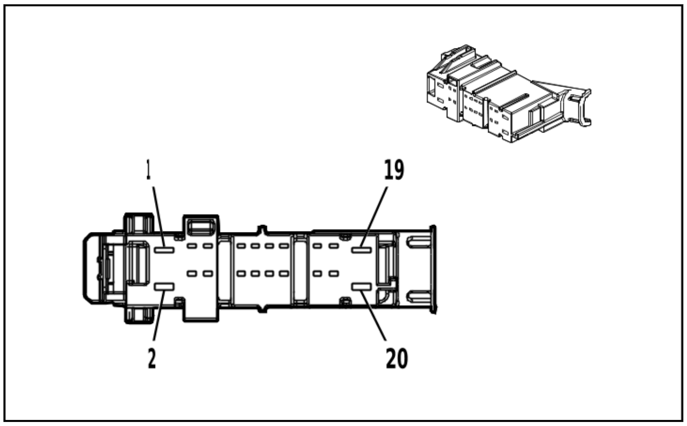
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	13586064	J-35616-5 (PU)	J-38125-212
III	84616651	J-35616-13 (BU)	J-38125-215A

X503 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / BU	(1) 1240	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / BU	(1) 1240	(1) II	(1) —
(2) 2	(2) 2.5	(2) BK	(2) 1150	(2) I	(2) —	(2) Ground	(2) 2	(2) 2.5	(2) BK	(2) 3750	(2) II	(2) —
(3) 3	(3) 0.75	(3) BU / YE	(3) 1091	(3) I	(3) —	(3) Left Rear Door Lock Actuator Lock Control	(3) 3	(3) 0.75	(3) BU / YE	(3) 1091	(3) III	(3) —
(4) 4	(4) 0.75	(4) WH	(4) 2679	(4) I	(4) —	(4) Lock Actuators Unlock Control 1	(4) 4	(4) 0.75	(4) WH	(4) 2679	(4) III	(4) —
5 - 6	—	—	—	—	—	Not Occupied	5 - 6	—	—	—	—	—
(7) 7	(7) 0.35	(7) GN / GY	(7) 6135	(7) I	(7) —	(7) Body Control Module LIN Bus 4	(7) 7	(7) 0.35	(7) GN / GY	(7) 6135	(7) III	(7) —
8 - 11	—	—	—	—	—	Not Occupied	8 - 11	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(12) 12	(12) 0.75 (12) 0.5	(12) GN / BK (12) GN / BK	(12) 116 (12) 116	(12) I (12) I	(12) UQ3 (12) UQA	(12) Left Rear Speaker [-] Control (12) Left Rear Speaker [-] Control	(12) 12	(12) 0.75 (12) 0.5	(12) GN / BK (12) GN / BK	(12) 116 (12) 116	(12) III (12) III	(12) UQ3 (12) UQA
(13) 13	(13) 0.75 (13) 0.5	(13) GN (13) GN	(13) 199 (13) 199	(13) I (13) I	(13) UQ3 (13) UQA	(13) Left Rear Speaker [+] Control (13) Left Rear Speaker [+] Control	(13) 13	(13) 0.75 (13) 0.5	(13) GN (13) GN	(13) 199 (13) 199	(13) III (13) III	(13) UQ3 (13) UQA
14 - 20	—	—	—	—	—	Not Occupied	14 - 20	—	—	—	—	—

X604 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness



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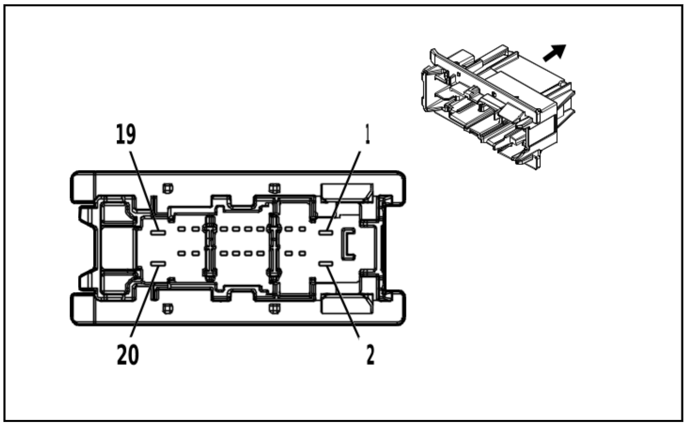


4663657

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

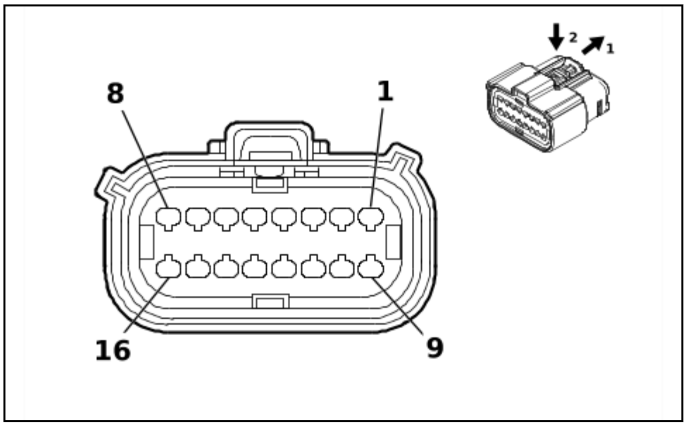
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	13586064	J-35616-5 (PU)	J-38125-212
III	84616651	J-35616-13 (BU)	J-38125-215A

X604 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / GY	(1) 3540	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / GY	(1) 3540	(1) II	(1) —
(2) 2	(2) 2.5	(2) BK	(2) 1250	(2) I	(2) —	(2) Ground	(2) 2	(2) 2.5	(2) BK	(2) 4250	(2) II	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) 0.75	(3) VT / WH	(3) 1094	(3) I	(3) —	(3) Right Rear Door Lock Actuator Lock Control	(3) 3	(3) 0.75	(3) VT / WH	(3) 1094	(3) III	(3) —
(4) 4	(4) 0.75	(4) GY / BK	(4) 2680	(4) I	(4) —	(4) Lock Actuators Unlock Control 2	(4) 4	(4) 0.75	(4) GY / BK	(4) 2680	(4) III	(4) —
5 - 6	—	—	—	—	—	Not Occupied	5 - 6	—	—	—	—	—
(7) 7	(7) 0.35	(7) GN / GY	(7) 6135	(7) I	(7) —	(7) Body Control Module LIN Bus 4	(7) 7	(7) 0.35	(7) GN / GY	(7) 6135	(7) III	(7) —
8 - 11	—	—	—	—	—	Not Occupied	8 - 11	—	—	—	—	—
(12) 12	(12) 0.75 (12) 0.5	(12) BU / BK (12) BU / BK	(12) 115 (12) 115	(12) I (12) I	(12) UQ3 (12) UQA	(12) Right Rear Speaker [-] Control (12) Right Rear Speaker [-] Control	(12) 12	(12) 0.5 (12) 0.75	(12) BU / BK (12) BU / BK	(12) 115 (12) 115	(12) III (12) III	(12) UQ3 (12) UQA
(13) 13	(13) 0.75 (13) 0.5	(13) WH (13) WH	(13) 46 (13) 46	(13) I (13) I	(13) UQ3 (13) UQA	(13) Right Rear Speaker [+] Control (13) Right Rear Speaker [+] Control	(13) 13	(13) 0.75 (13) 0.5	(13) WH (13) WH	(13) 46 (13) 46	(13) III (13) III	(13) UQ3 (13) UQA
14 - 20	—	—	—	—	—	Not Occupied	14 - 20	—	—	—	—	—

X700 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness



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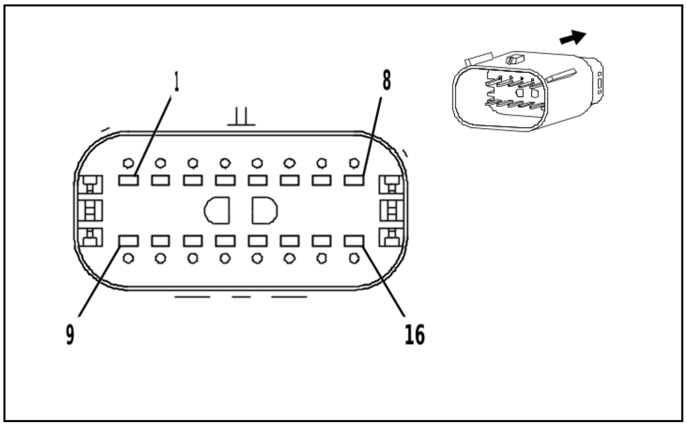


4223713

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33472-1607
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 MX Series, Sealed(L-GY)

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-8602
- Service Connector: 84625100
- Description: 16-Way M 1.5 MX Series, Sealed(GY)

Terminal Part Information

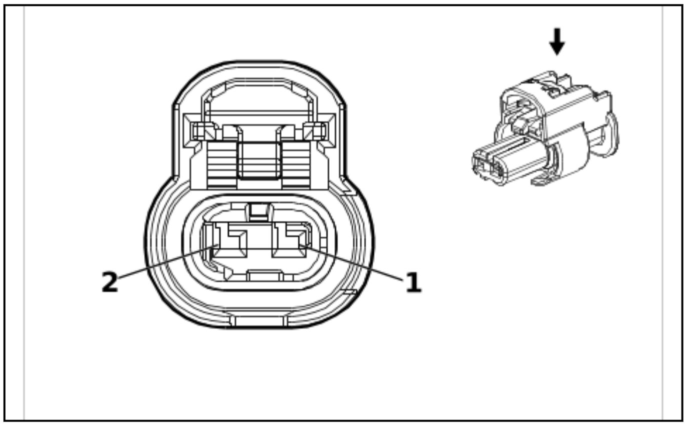
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	86800300	J-35616-3 (GY)	J-38125-217

X700 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / VT	(1) 4101	(1) I	(1) —	(1) AUTOSAR CAN Bus [+] 4 Serial Data	(1) 1	(1) 0.5	(1) BU / VT	(1) 4101	(1) III	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4100	(2) I	(2) —	(2) AUTOSAR CAN Bus [-] 4 Serial Data	(2) 2	(2) 0.5	(2) WH	(2) 4100	(2) III	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.5	(4) GY / BK	(4) 2680	(4) I	(4) —	(4) Lock Actuators Unlock Control 2	(4) 4	(4) 0.5	(4) GY / BK	(4) 2680	(4) III	(4) —
(5) 5	(5) 0.5	(5) GY / VT	(5) 2691	(5) I	(5) —	(5) Rear Closure Actuator Lock Control	(5) 5	(5) 0.5	(5) GY / VT	(5) 2691	(5) III	(5) —
(6) 6	(6) 0.5	(6) YE	(6) 2375	(6) I	(6) —	(6) Left Rear Outer Parking Assist Sensor Signal	(6) 6	(6) 0.5	(6) YE	(6) 2375	(6) III	(6) —
(7) 7	(7) 0.75	(7) BK / GY	(7) 2379	(7) II	(7) —	(7) Object Sensor Low Reference	(7) 7	(7) 0.75	(7) BK / GY	(7) 2379	(7) III	(7) —
(8) 8	(8) 0.75	(8) BN / WH	(8) 2374	(8) II	(8) —	(8) Object Sensor Voltage Reference	(8) 8	(8) 0.75	(8) BN / WH	(8) 2374	(8) III	(8) —
(9) 9	(9) 0.5	(9) RD / BN	(9) 4940	(9) I	(9) —	(9) Battery Positive Voltage	(9) 9	(9) 0.5	(9) RD / BN	(9) 4940	(9) III	(9) —
(10) 10	(10) 0.5	(10) BK / WH	(10) 751	(10) I	(10) —	(10) Signal Ground	(10) 10	(10) 0.5	(10) BK / WH	(10) 751	(10) III	(10) —
(11) 11	(11) 0.5	(11) GN / YE	(11) 6846	(11) I	(11) —	(11) Rear License Plate Lamp Control	(11) 11	(11) 0.5	(11) GN / YE	(11) 6846	(11) III	(11) —
(12) 12	(12) 0.5	(12) BK	(12) 750	(12) I	(12) —	(12) Ground	(12) 12	(12) 0.5	(12) BK	(12) 750	(12) III	(12) —
13	—	—	—	—	—	Not Occupied	13	—	—	—	—	—
(14) 14	(14) 0.5	(14) YE / BU	(14) 2376	(14) I	(14) —	(14) Left Rear Middle Parking Assist Sensor Signal	(14) 14	(14) 0.5	(14) YE / BU	(14) 2376	(14) III	(14) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(15) 15	(15) 0.5	(15) YE / WH	(15) 2377	(15) I	(15) —	(15) Right Rear Middle Parking Assist Sensor Signal	(15) 15	(15) 0.5	(15) YE / WH	(15) 2377	(15) III	(15) —
(16) 16	(16) 0.5	(16) YE / VT	(16) 2378	(16) I	(16) —	(16) Right Rear Outer Parking Assist Sensor Signal	(16) 16	(16) 0.5	(16) YE / VT	(16) 2378	(16) III	(16) —

X708 Chassis Rear Wiring Harness to Chassis Wiring Harness



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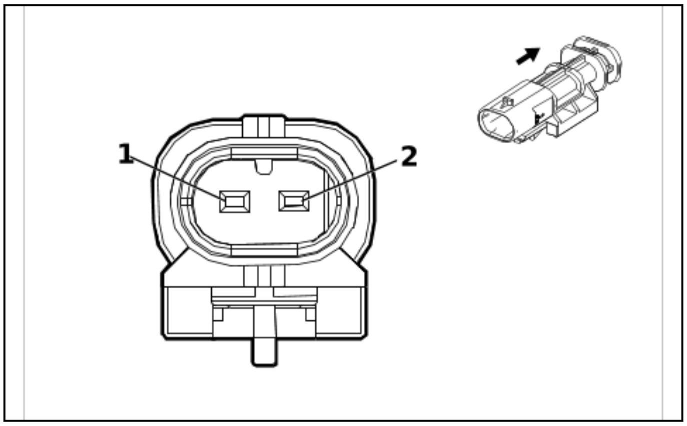


5200722

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-2
- Service Connector: 86526153
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

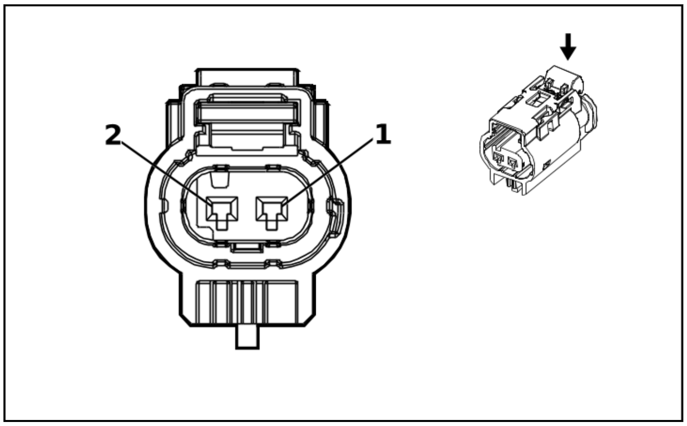
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

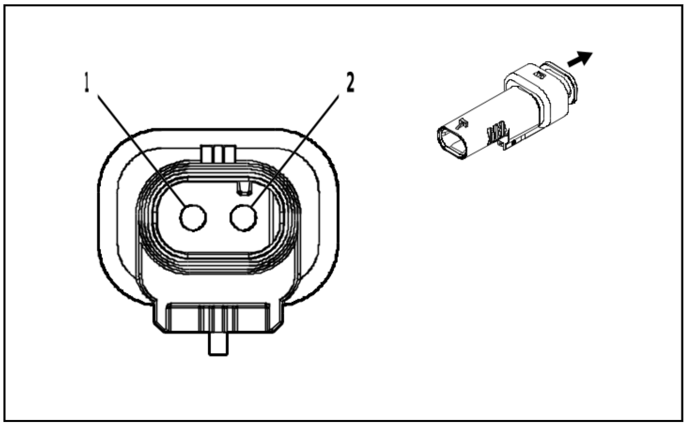
X708 Chassis Rear Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) I	(1) —	(1) Ground	(1) 1	(1) 0.5	(1) BK	(1) 750	(1) II	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) I	(2) —	(2) Identification Lamp Control	(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) II	(2) —

X777 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- G94)



5207726



4992757

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094251
- Service Connector: 19371200
- Description: 2-Way M 1.2 MLK Series, Sealed(GY)

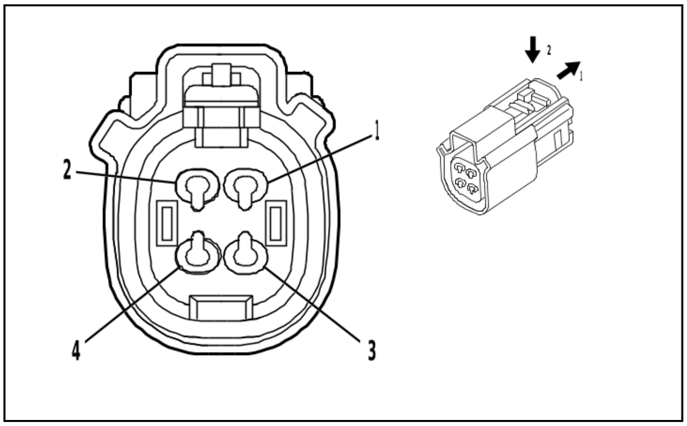
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X777 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- G94)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 1616	(1) I	(1) —	(1) Rear Brake Pad Wear Sensor Signal	(1) 1	(1) 0.5	(1) GN / YE	(1) 1616	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 2051	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 2051	(2) II	(2) —

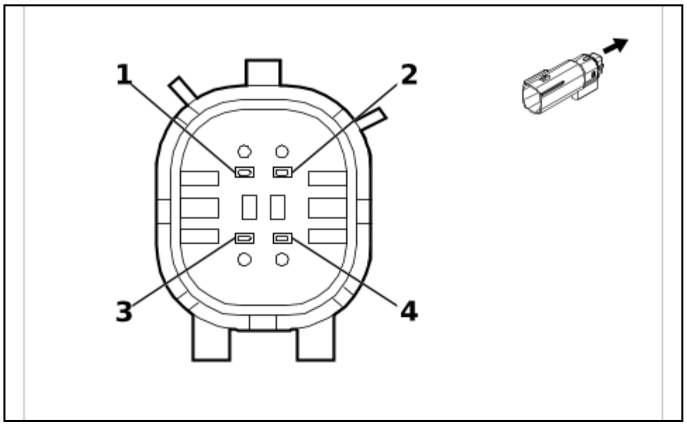
X788 Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness



3960090

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-4007
- Service Connector: 19368970
- Description: 4-Way F 1.5 MX Series, Sealed(GY)



5604894

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M (GY)

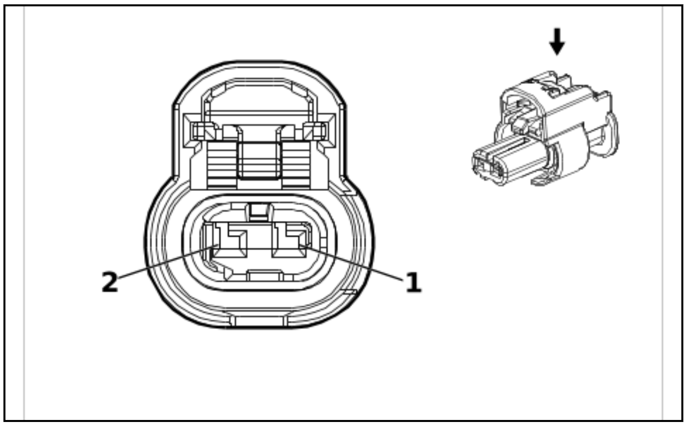
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	Not required	No Tool Required	No Tool Required

X788 Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / BN	(1) 7258	(1) II	(1) —	(1) Rear Differential Lock Actuator Control	(1) 1	(1) 0.75	(1) VT / BN	(1) 7258	(1) III	(1) —
(2) 2	(2) 0.75	(2) GY / BK	(2) 7253	(2) II	(2) —	(2) Rear Differential Lock Actuator Low Control	(2) 2	(2) 0.75	(2) GY / BK	(2) 7253	(2) III	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 1616	(3) I	(3) —	(3) Rear Brake Pad Wear Sensor Signal	(3) 3	(3) 0.5	(3) GN / YE	(3) 1616	(3) III	(3) —
(4) 4	(4) 0.5	(4) BK / WH	(4) 2051	(4) I	(4) —	(4) Signal Ground	(4) 4	(4) 0.5	(4) BK / WH	(4) 2051	(4) III	(4) —

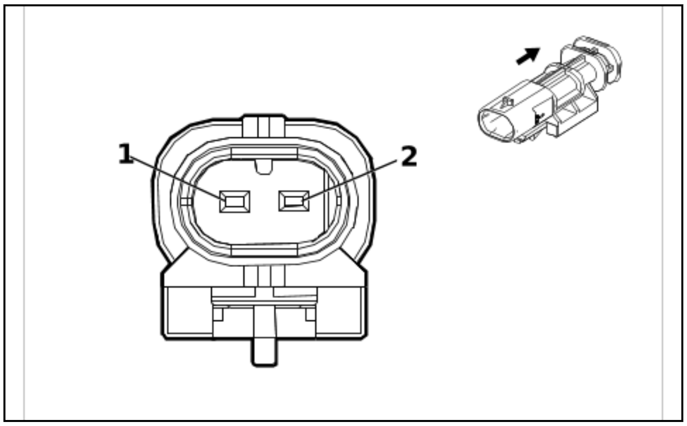
X808 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness



4335931

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F (BK)



5200722

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-2
- Service Connector: 86526153
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

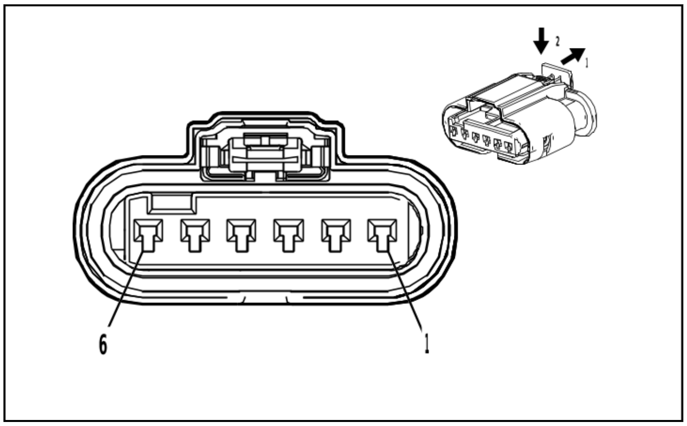
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X808 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) I	(1) —	(1) Ground	(1) 1	(1) 0.5	(1) BK	(1) 850	(1) II	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) I	(2) —	(2) Identification Lamp Control	(2) 2	(2) 0.5	(2) BN / GN	(2) 4246	(2) II	(2) —

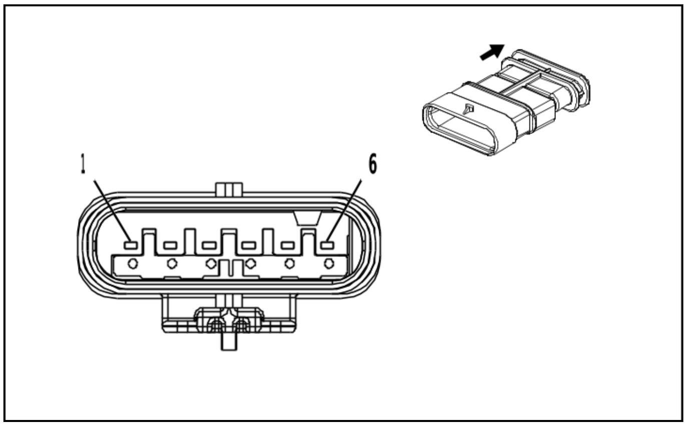
X820 Body Rear Wiring Harness to Chassis Wiring Harness (KC9)



3960142

Connector Part Information

- Harness Type: Body Rear Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F



4561098

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34899-6120
- Service Connector: 86526152
- Description: 6-Way M 1.2 MCON Series, Sealed(YE)

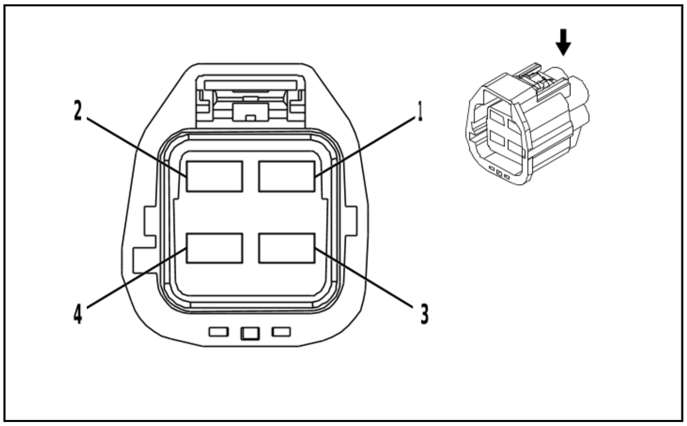
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

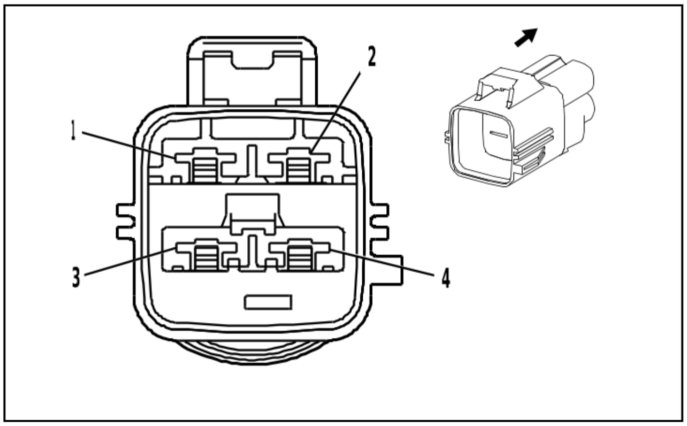
X820 Body Rear Wiring Harness to Chassis Wiring Harness (KC9)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 850	(1) I	(1) —	(1) Ground	(1) 1	(1) 0.5	(1) BK	(1) 850	(1) II	(1) —
(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) I	(2) —	(2) AC Power Outlet Sensor High Reference	(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / BN	(3) 2266	(3) I	(3) —	(3) DC/AC Inverter Control 2	(3) 3	(3) 0.5	(3) GN / BN	(3) 2266	(3) II	(3) —
(4) 4	(4) 0.75	(4) BK	(4) 10119	(4) I	(4) —	(4) AC Outlet 2 Low Reference	(4) 4	(4) 0.75	(4) BK	(4) 10119	(4) II	(4) —
(5) 5	(5) 0.75	(5) BK / WH	(5) 10120	(5) I	(5) —	(5) AC Outlet 2 Phase A Control	(5) 5	(5) 0.75	(5) BK / WH	(5) 10120	(5) II	(5) —
(6) 6	(6) 0.75	(6) RD / WH	(6) 10121	(6) I	(6) —	(6) AC Outlet 2 Phase B Control	(6) 6	(6) 0.75	(6) RD / WH	(6) 10121	(6) II	(6) —

X904A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness



2852121



1853524

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7288-3029-10
- Service Connector: 19371198
- Description: 4-Way M 6.3 Series, Sealed(GY)

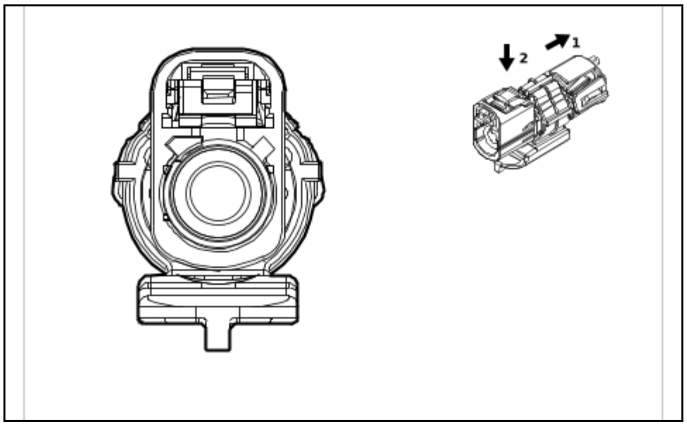
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-43 (RD)	No Tool Required

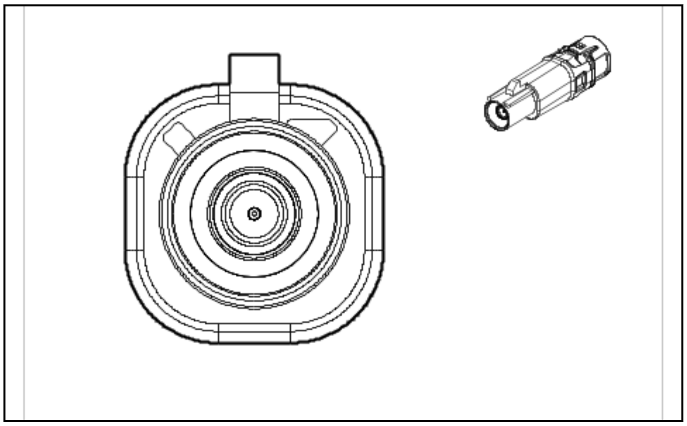
X904A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 5	(1) WH	(1) 2001	(1) I	(1) —	(1) Left Park Brake Motor Apply Control	(1) 1	(1) 5	(1) WH	(1) 2001	(1) II	(1) —
(2) 2	(2) 5	(2) GY / BK	(2) 4369	(2) I	(2) —	(2) Left Park Brake Motor Low Reference	(2) 2	(2) 5	(2) GY / BK	(2) 4369	(2) II	(2) —
(3) 3	(3) 5	(3) GN / VT	(3) 1988	(3) I	(3) —	(3) Right Park Brake Motor Apply Control	(3) 3	(3) 5	(3) GN / VT	(3) 1988	(3) II	(3) —
(4) 4	(4) 5	(4) GY	(4) 4368	(4) I	(4) —	(4) Right Park Brake Motor Low Reference	(4) 4	(4) 5	(4) GY	(4) 4368	(4) II	(4) —

X933 Chassis Wiring Harness to Rear Object Alarm Sensor Wiring Harness



5519150



5295025

Connector Part Information
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35863344
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BK)

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness COAX
- OEM Connector: 2304240-1
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

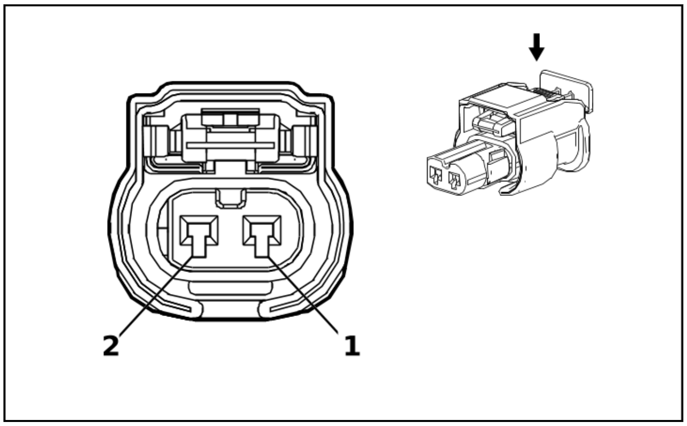
Terminal Part Information

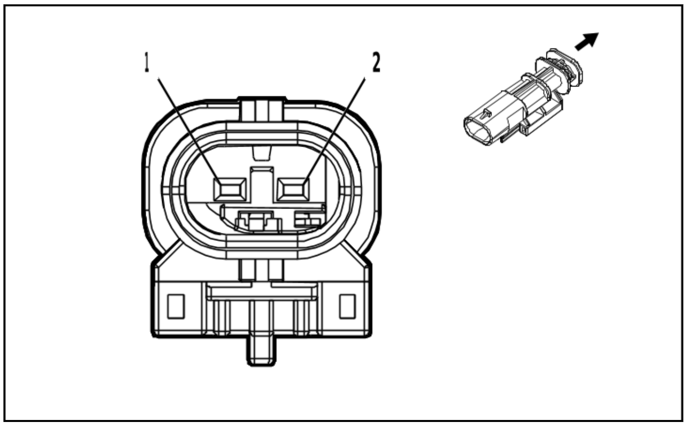
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X933 Chassis Wiring Harness to Rear Object Alarm Sensor Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X950 Liftgate Jumper Wiring Harness to Rear Object Alarm Sensor Wiring Harness





Connector Part Information
- Harness Type: Liftgate Jumper Wiring Harness
- OEM Connector: 34900-2121
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 34899-2081
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(GY)

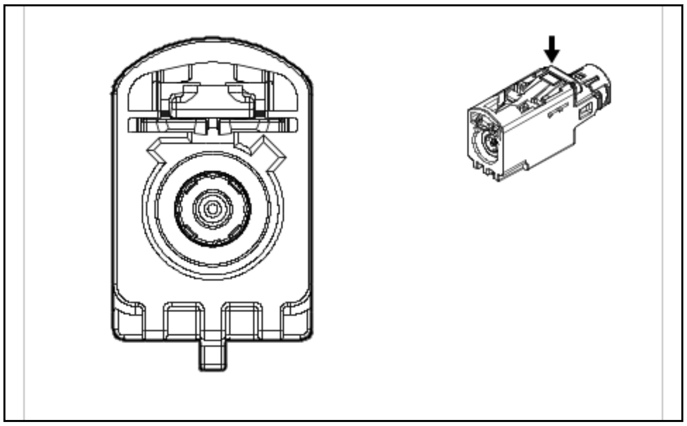
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X950 Liftgate Jumper Wiring Harness to Rear Object Alarm Sensor Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2691	(1) I	(1) —	(1) Rear Closure Actuator Lock Control	(1) 1	(1) 0.5	(1) GY / VT	(1) 2691	(1) II	(1) —
(2) 2	(2) 0.5	(2) GY / BK	(2) 2680	(2) I	(2) —	(2) Lock Actuators Unlock Control 2	(2) 2	(2) 0.5	(2) GY / BK	(2) 2680	(2) II	(2) —

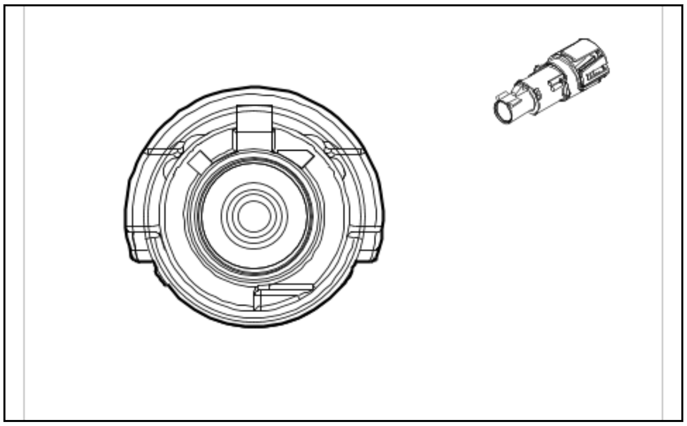
X955 Rear Object Alarm Sensor Wiring Harness to Liftgate Jumper Wiring Harness



5263386

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness COAX
- OEM Connector: 2-2304242-1
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)



5518522

Connector Part Information

- Harness Type: Liftgate Jumper Wiring Harness COAX
- OEM Connector: 13516806
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

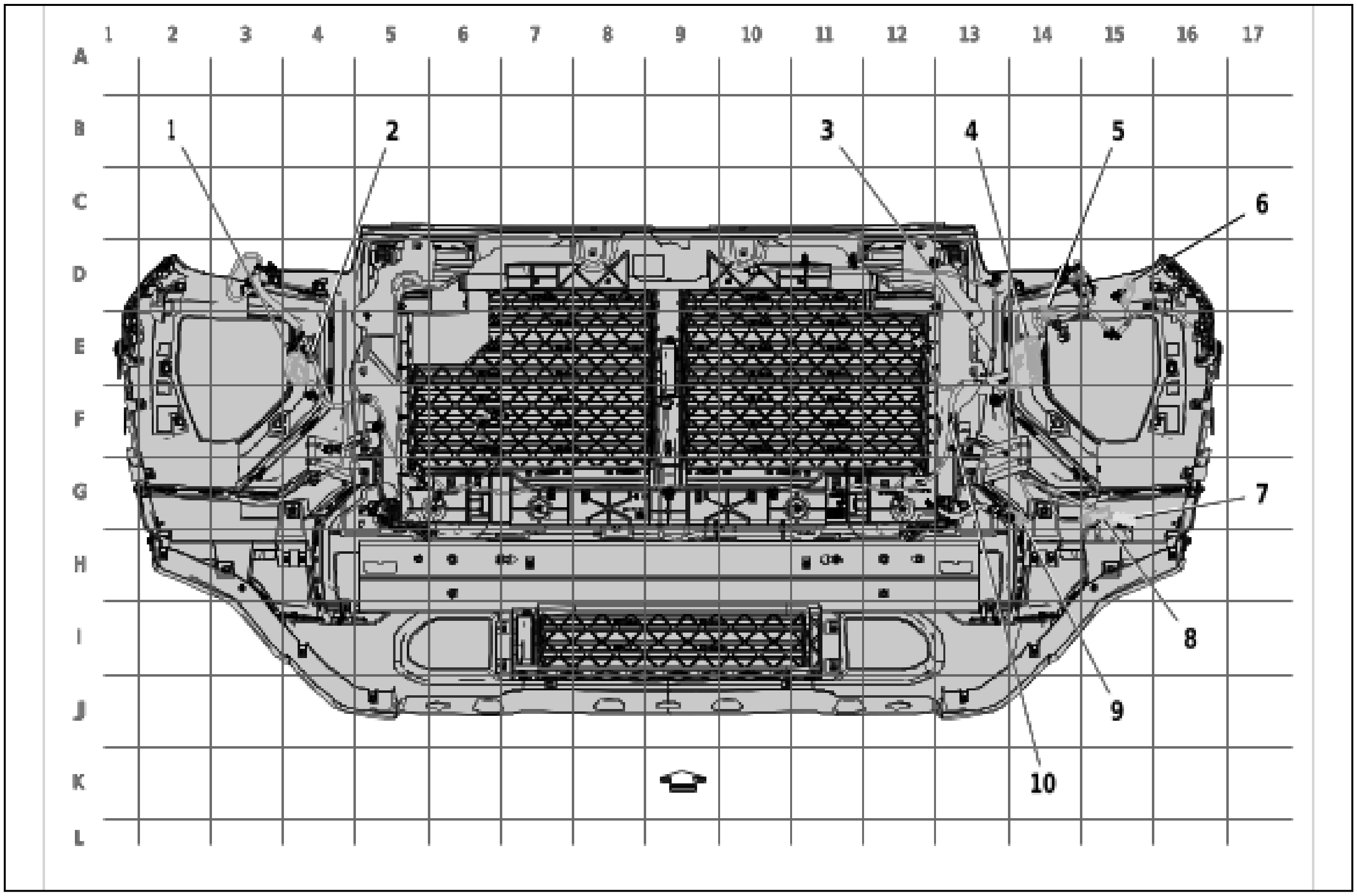
X955 Rear Object Alarm Sensor Wiring Harness to Liftgate Jumper Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Coaxial Antenna TV3 Signal	—	—	Coax Cable	—	I	—

Electrical Component Locator and Harness Routing Views

Schematic and Routing Diagrams

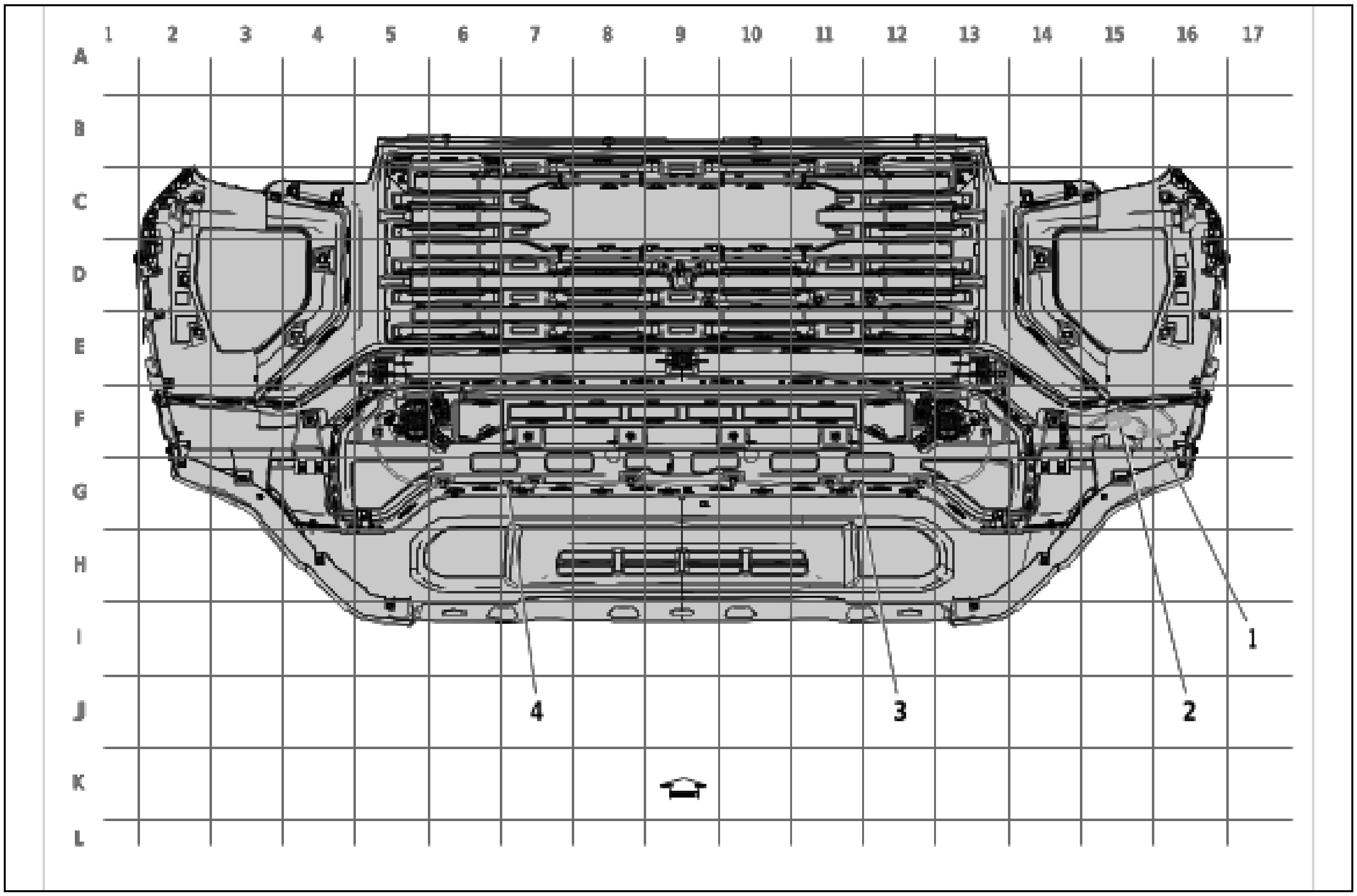
Forward Lamp Harness Routing - Front Fascia



6178572

Items
(1) X150 Body Wiring Harness to Forward Lamp Wiring Harness
(2) J102 Forward Lamp Wiring Harness
(3) J104 Forward Lamp Wiring Harness
(4) X250R Body Wiring Harness to Forward Lamp Wiring Harness
(5) X156 Body Wiring Harness to Forward Lamp Wiring Harness (UXA)
(6) X250J Windshield Washer Pump Extension Wiring Harness to Forward Lamp Wiring Harness
(7) X195 Forward Lamp Wiring Harness to Front View Camera Switch Wiring Harness
(8) X260 Front Object Alarm Sensor Wiring Harness to Forward Lamp Wiring Harness
(9) X250A Radiator Extension Harness to Forward Lamp Wiring Harness
(10) J103 Forward Lamp Wiring Harness

Front Fascia Harness Routing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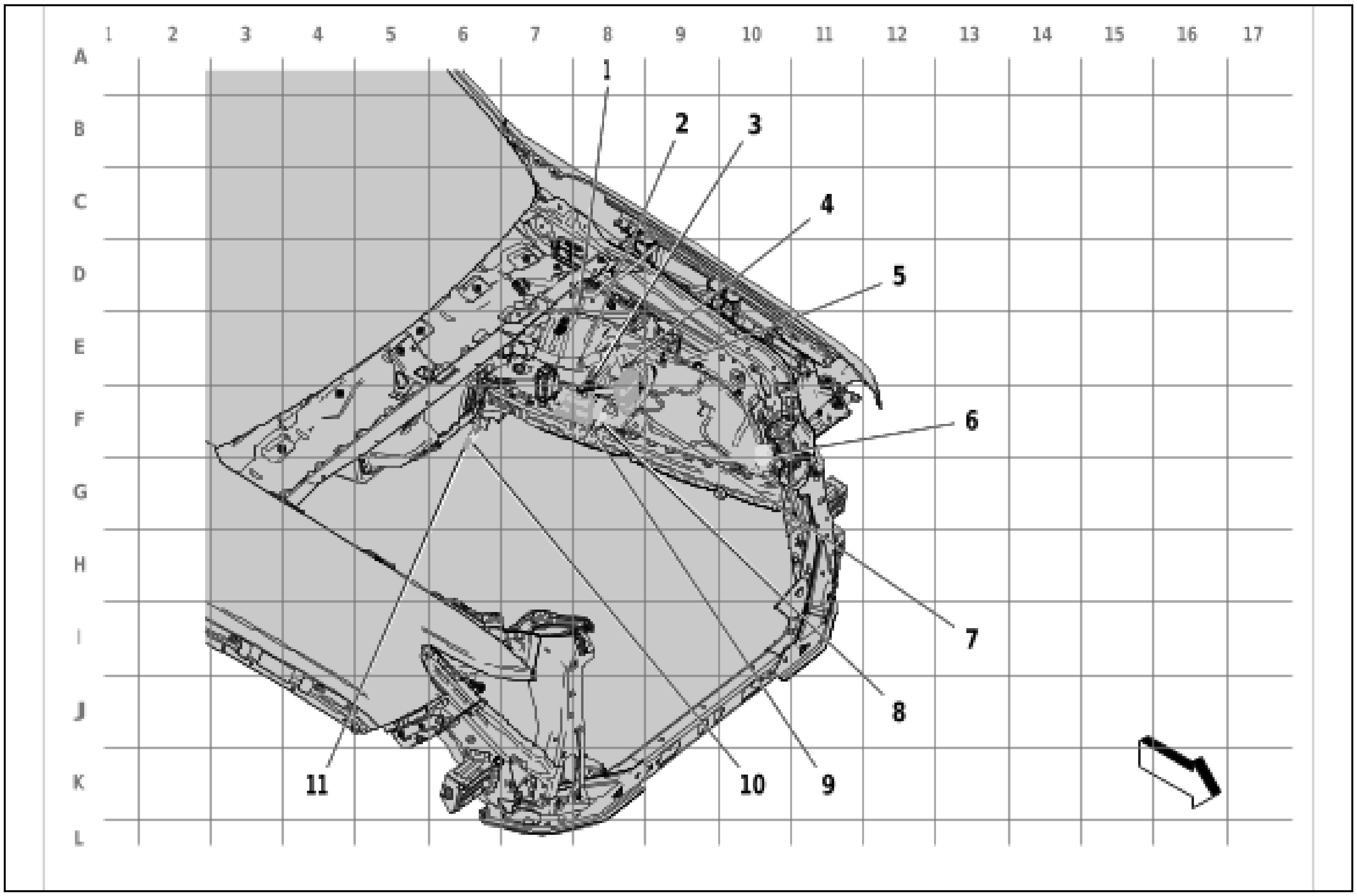
6178573

Items
(1) X195 Forward Lamp Wiring Harness to Front View Camera Switch Wiring Harness
(2) X260 Front Object Alarm Sensor Wiring Harness to Forward Lamp Wiring Harness
(3) J100 Front Object Alarm Sensor Wiring Harness
(4) J101 Front Object Alarm Sensor Wiring Harness

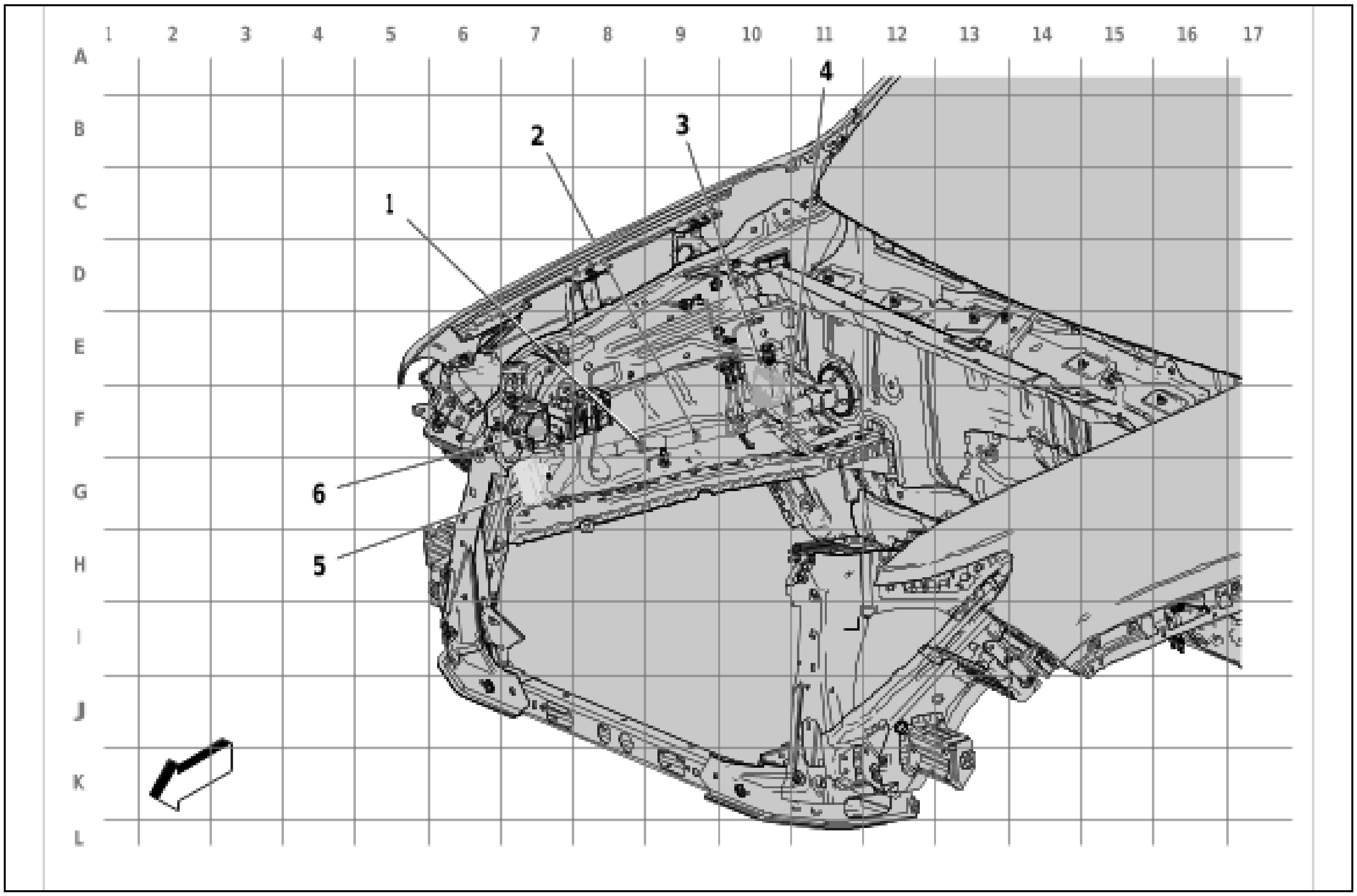
Body Harness Routing - Left Side of Engine Compartment



6178574

Items
(1) J114 Body Wiring Harness
(2) J113 Body Wiring Harness
(3) J112 Body Wiring Harness
(4) J110 Body Wiring Harness
(5) J111 Body Wiring Harness
(6) X150 Body Wiring Harness to Forward Lamp Wiring Harness
(7) X100 Chassis Wiring Harness to Body Wiring Harness
(8) X199 Chassis Wiring Harness to Body Wiring Harness
(9) X101 Body Wiring Harness to Chassis Wiring Harness
(10) X384 Rearview Camera Wiring Harness Jumper to Body Wiring Harness (UXA)
(11) X383 Rearview Camera Wiring Harness Jumper to Body Wiring Harness (UXA)

Body Harness Routing - Right Side of Engine Compartment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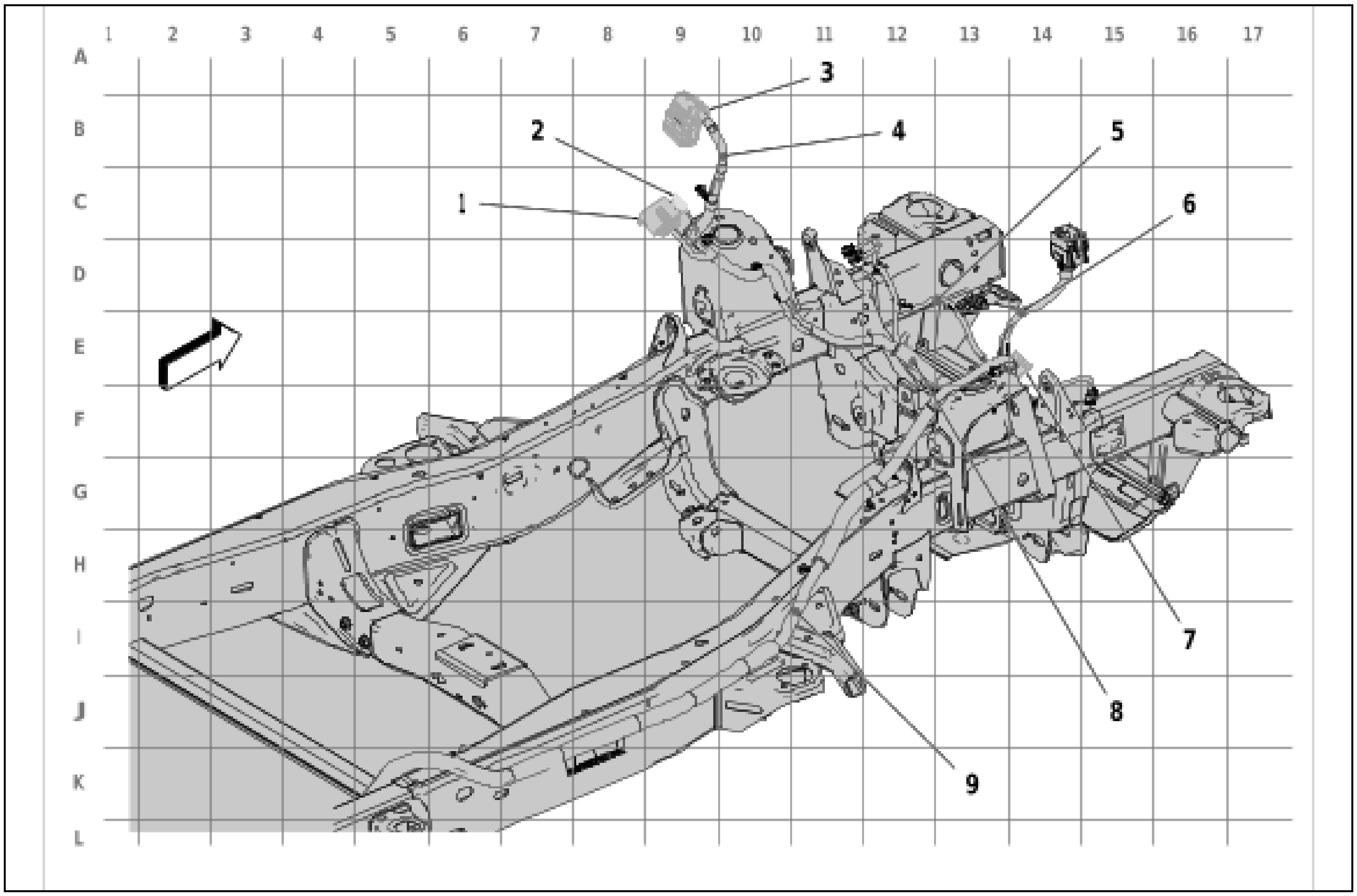
6178575

Items
(1) J107 Body Wiring Harness
(2) J106 Body Wiring Harness
(3) X201 Engine Wiring Harness to Body Wiring Harness
(4) J105 Body Wiring Harness
(5) X250R Body Wiring Harness to Forward Lamp Wiring Harness
(6) X156 Body Wiring Harness to Forward Lamp Wiring Harness (UXA)

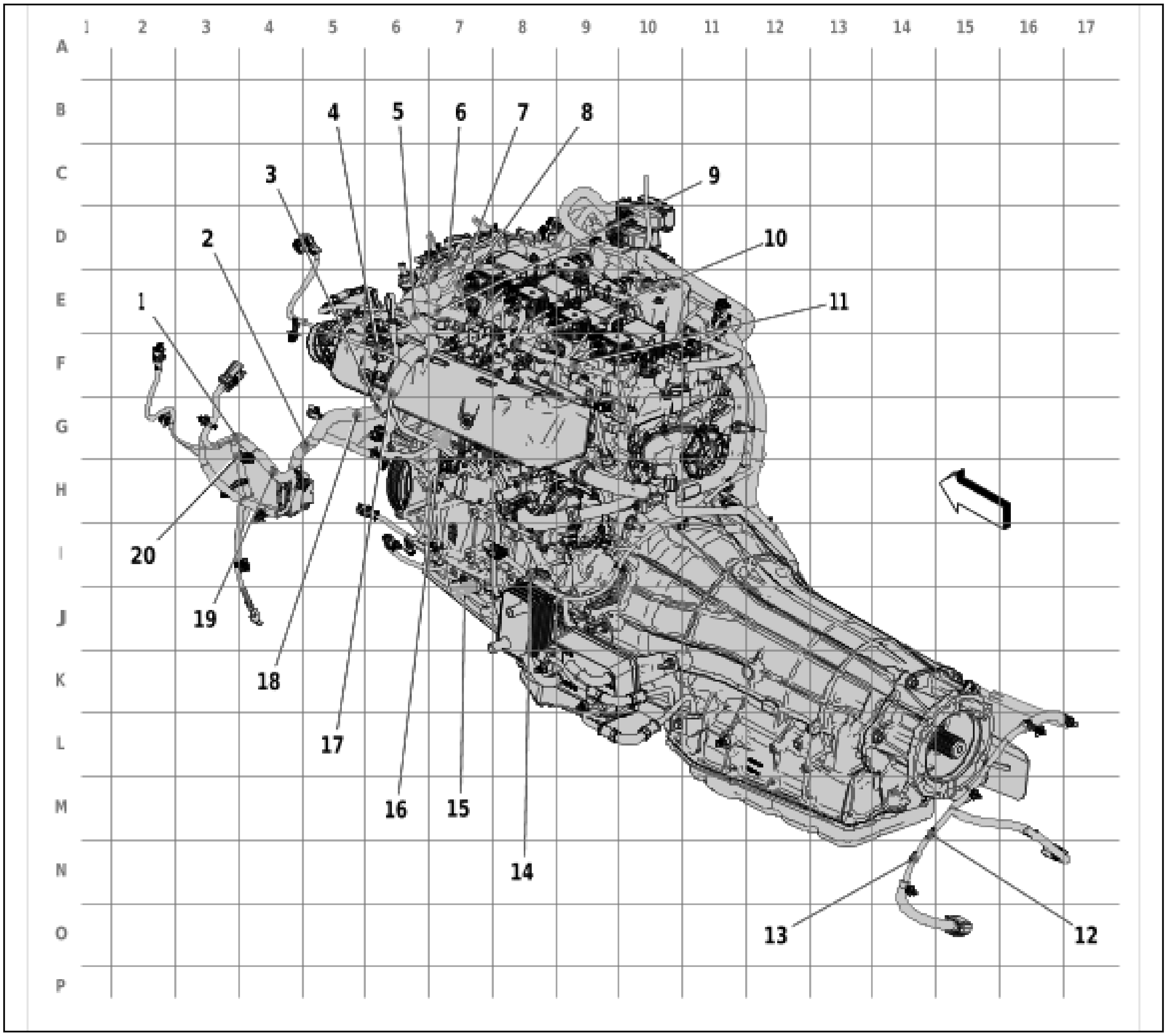
Chassis Harness Routing - Front



6178576

Items
(1) X101 Body Wiring Harness to Chassis Wiring Harness
(2) X199 Chassis Wiring Harness to Body Wiring Harness
(3) X100 Chassis Wiring Harness to Body Wiring Harness
(4) J109 Chassis Wiring Harness
(5) J108 Chassis Wiring Harness
(6) J115 Chassis Wiring Harness
(7) X204 Engine Wiring Harness to Chassis Wiring Harness
(8) X107 Chassis Wiring Harness to Power Steering Wiring Harness
(9) J116 Chassis Wiring Harness

Engine Harness Routing - Left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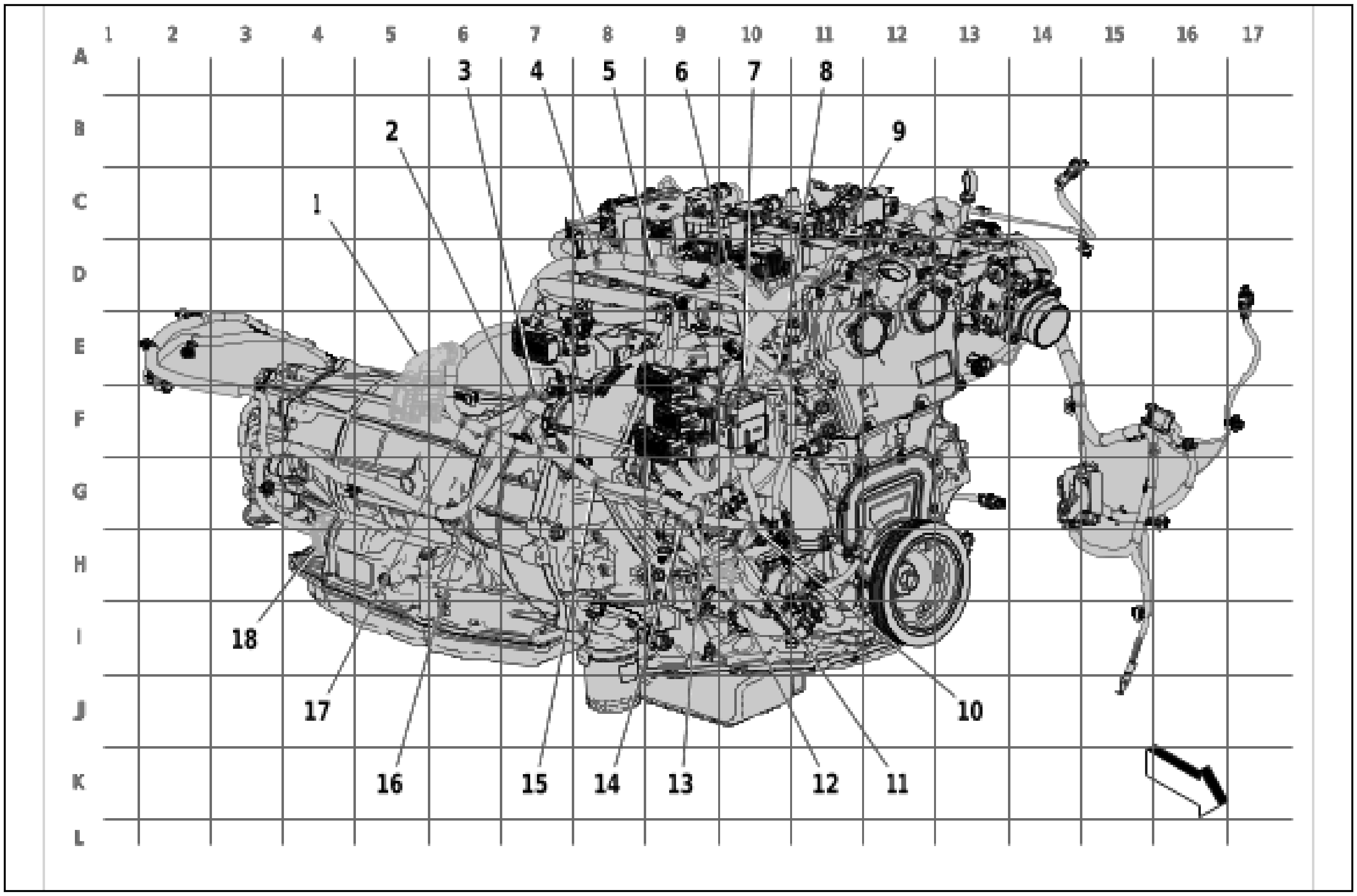
6178577

Items
(1) J151 Engine Wiring Harness
(2) J149 Engine Wiring Harness
(3) J147 Engine Wiring Harness
(4) J142 Engine Wiring Harness
(5) J141 Engine Wiring Harness
(6) J136 Engine Wiring Harness
(7) J135 Engine Wiring Harness
(8) J132 Engine Wiring Harness
(9) J138 Engine Wiring Harness
(10) J140 Engine Wiring Harness
(11) J143 Engine Wiring Harness
(12) J145 Engine Wiring Harness

Items
(13) J146 Engine Wiring Harness
(14) J139 Engine Wiring Harness
(15) X144 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness
(16) X160 Engine Wiring Harness to Fuel Injector Wiring Harness
(17) J144 Engine Wiring Harness
(18) J148 Engine Wiring Harness
(19) J150 Engine Wiring Harness
(20) J152 Engine Wiring Harness

Engine Harness Routing - Right Front



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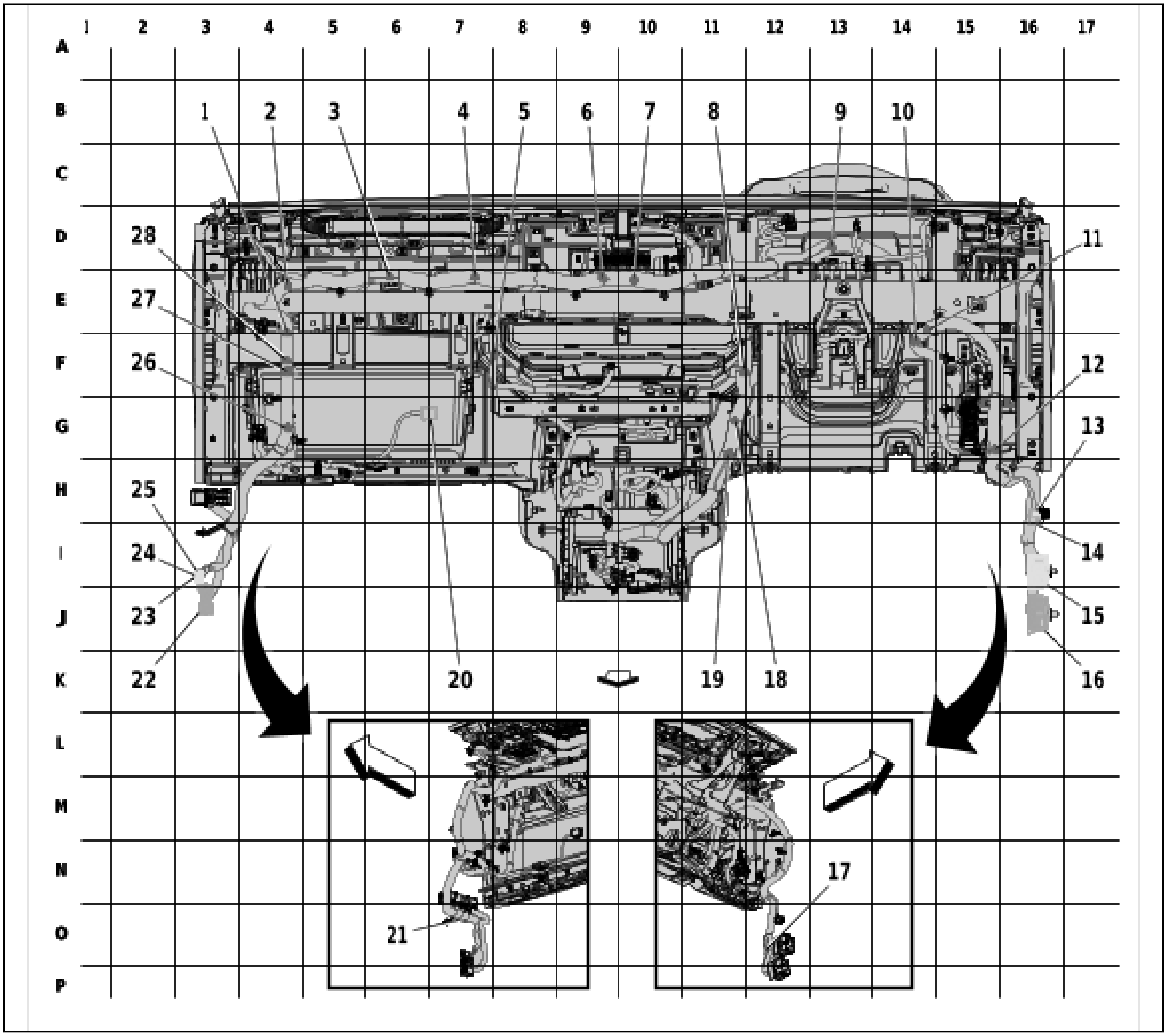
Items
(1) X201 Engine Wiring Harness to Body Wiring Harness
(2) J123 Engine Wiring Harness
(3) J137 Engine Wiring Harness
(4) J134 Engine Wiring Harness
(5) J133 Engine Wiring Harness
(6) J130 Engine Wiring Harness
(7) J128 Engine Wiring Harness
(8) J129 Engine Wiring Harness
(9) J131 Engine Wiring Harness

Items
(10) J120 Engine Wiring Harness
(11) J121 Engine Wiring Harness
(12) X204 Engine Wiring Harness to Chassis Wiring Harness
(13) J127 Engine Wiring Harness
(14) J122 Engine Wiring Harness
(15) J126 Engine Wiring Harness
(16) J124 Engine Wiring Harness
(17) J125 Engine Wiring Harness
(18) X175 Engine Wiring Harness to Automatic Transmission Wiring Harness

Instrument Panel Harness Routing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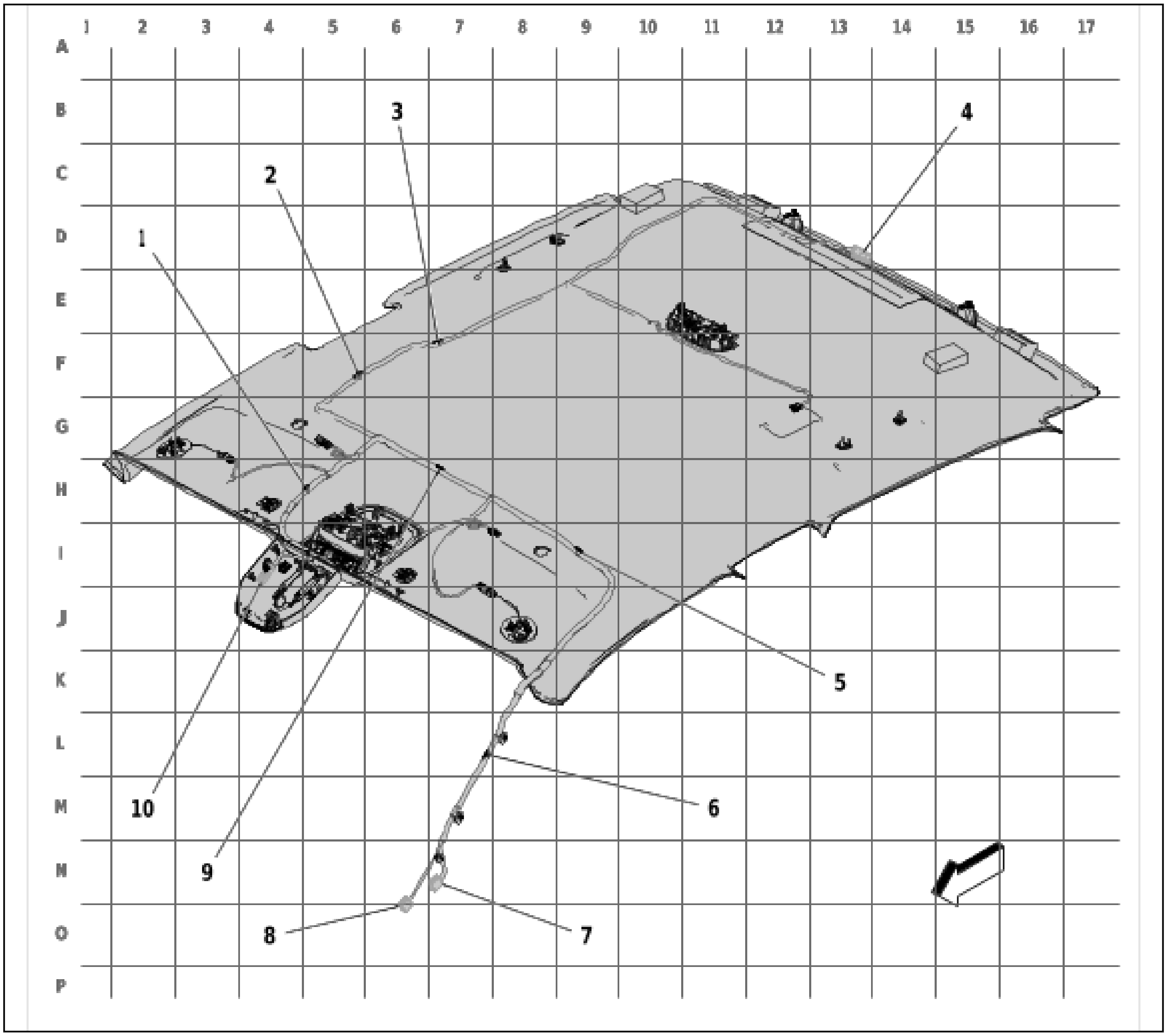
6178579

Items
(1) J227 Instrument Panel Wiring Harness
(2) J228 Instrument Panel Wiring Harness
(3) J225 Instrument Panel Wiring Harness
(4) J224 Instrument Panel Wiring Harness
(5) J223 Instrument Panel Wiring Harness
(6) J222 Instrument Panel Wiring Harness
(7) J219 Instrument Panel Wiring Harness
(8) J214 Instrument Panel Wiring Harness
(9) J211 Instrument Panel Wiring Harness
(10) J210 Instrument Panel Wiring Harness
(11) J209 Instrument Panel Wiring Harness
(12) J208 Instrument Panel Wiring Harness
(13) X380 Instrument Panel Wiring Harness to Body Wiring Harness (UV2/UXA-UVB)
(14) X399 Instrument Panel Wiring Harness to Body Wiring Harness
(15) X300 Body Wiring Harness to Instrument Panel Wiring Harness
(16) X301 Body Wiring Harness to Instrument Panel Wiring Harness
(17) W24 Blunt Cut - Trailer Brakes Provision
(18) J213 Instrument Panel Wiring Harness
(19) J212 Instrument Panel Wiring Harness
(20) X315 Instrument Panel Wiring Harness to Air Conditioning Wiring Harness
(21) W25 Blunt Cut - Configurable/Accessory Relay
(22) X400 Instrument Panel Wiring Harness to Body Wiring Harness
(23) X499C Body Wiring Harness to Instrument Panel Wiring Harness (U2K)
(24) X499B Body Wiring Harness to Instrument Panel Wiring Harness (U2Q)
(25) X499B Body Wiring Harness to Instrument Panel Wiring Harness (U2Q)
(26) J230 Instrument Panel Wiring Harness
(27) J229 Instrument Panel Wiring Harness
(28) J226 Instrument Panel Wiring Harness

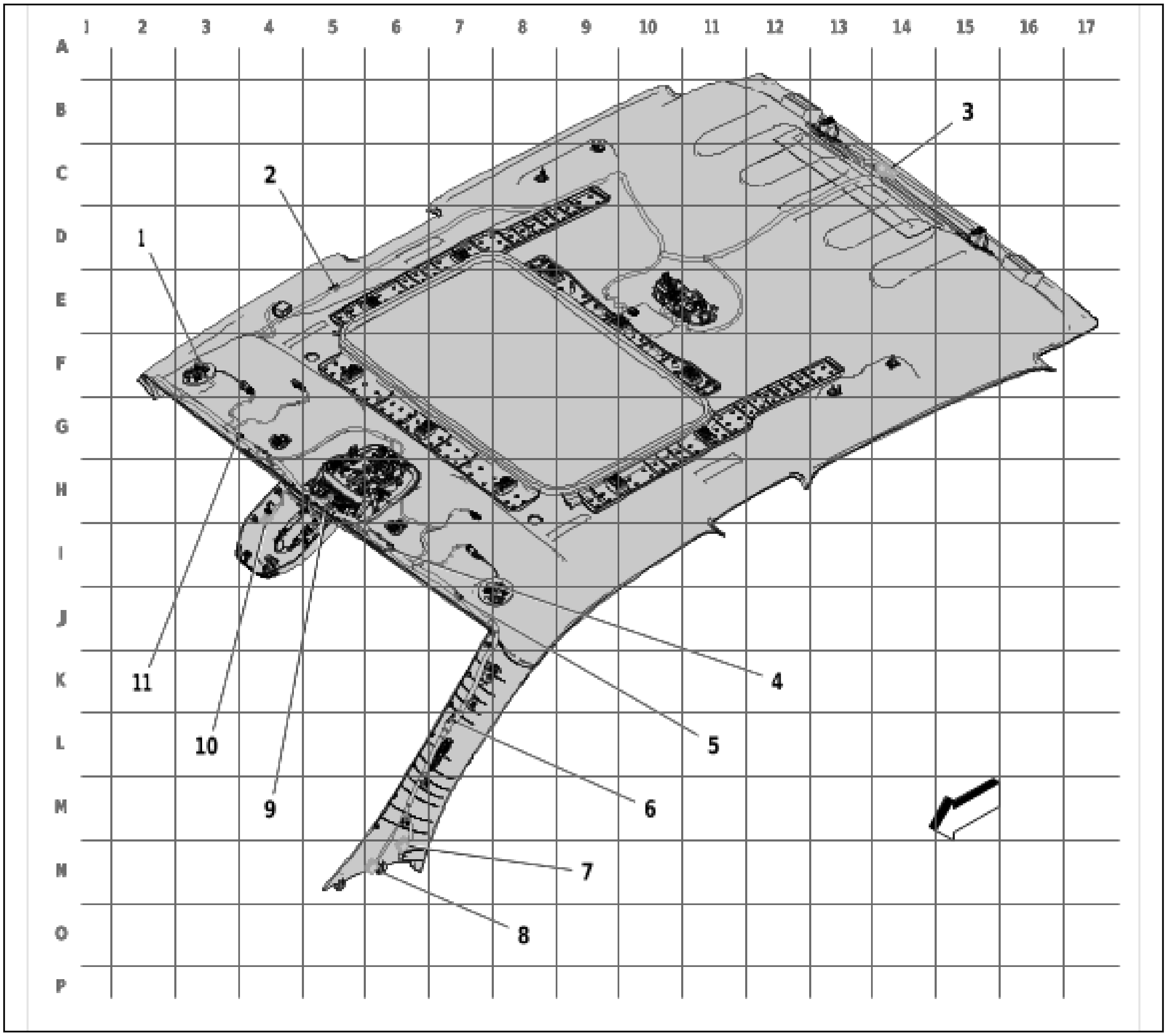
Headliner Harness Routing (- CAC)



6178580

Items
(1) J363 Headlining Wiring Harness
(2) J364 Headlining Wiring Harness
(3) J365 Headlining Wiring Harness
(4) X500 Roof Wiring Harness to Body Wiring Harness
(5) J361 Headlining Wiring Harness
(6) J360 Headlining Wiring Harness
(7) X402C Roof Wiring Harness to Body Wiring Harness
(8) X401 Roof Wiring Harness to Body Wiring Harness
(9) J362 Headlining Wiring Harness
(10) X402D Inside Air Moisture and Windshield Temperature Sensor Jumper to Roof Wiring Harness (CJ2)

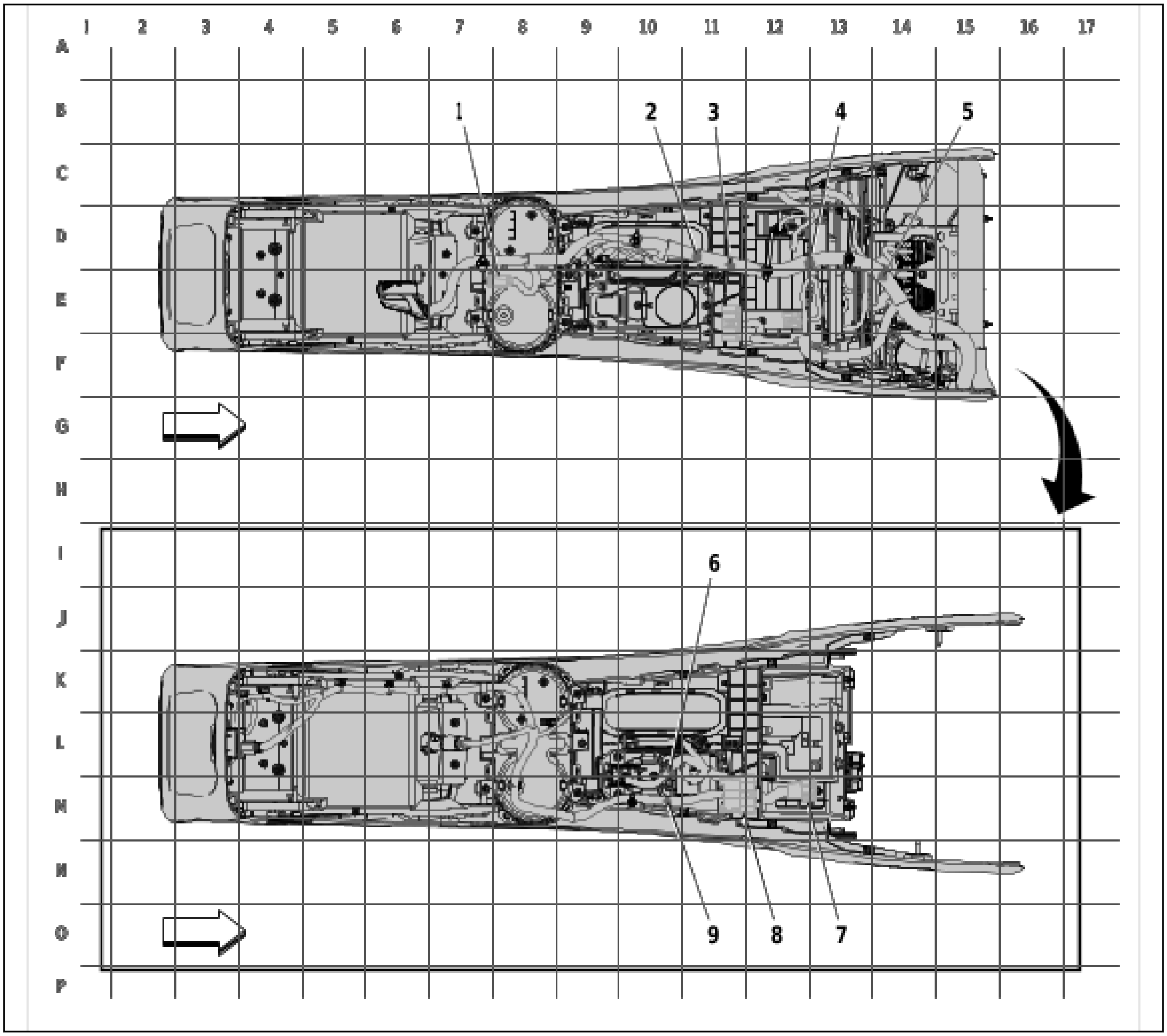
Headliner Harness Routing (CAC)



6178581

Items
(1) J362 Headlining Wiring Harness
(2) J364 Headlining Wiring Harness
(3) X500 Roof Wiring Harness to Body Wiring Harness
(4) J366 Headlining Wiring Harness
(5) J365 Headlining Wiring Harness
(6) J360 Headlining Wiring Harness
(7) X402C Roof Wiring Harness to Body Wiring Harness
(8) X401 Roof Wiring Harness to Body Wiring Harness
(9) J363 Headlining Wiring Harness
(10) X402D Inside Air Moisture and Windshield Temperature Sensor Jumper to Roof Wiring Harness (CJ2)
(11) J361 Headlining Wiring Harness

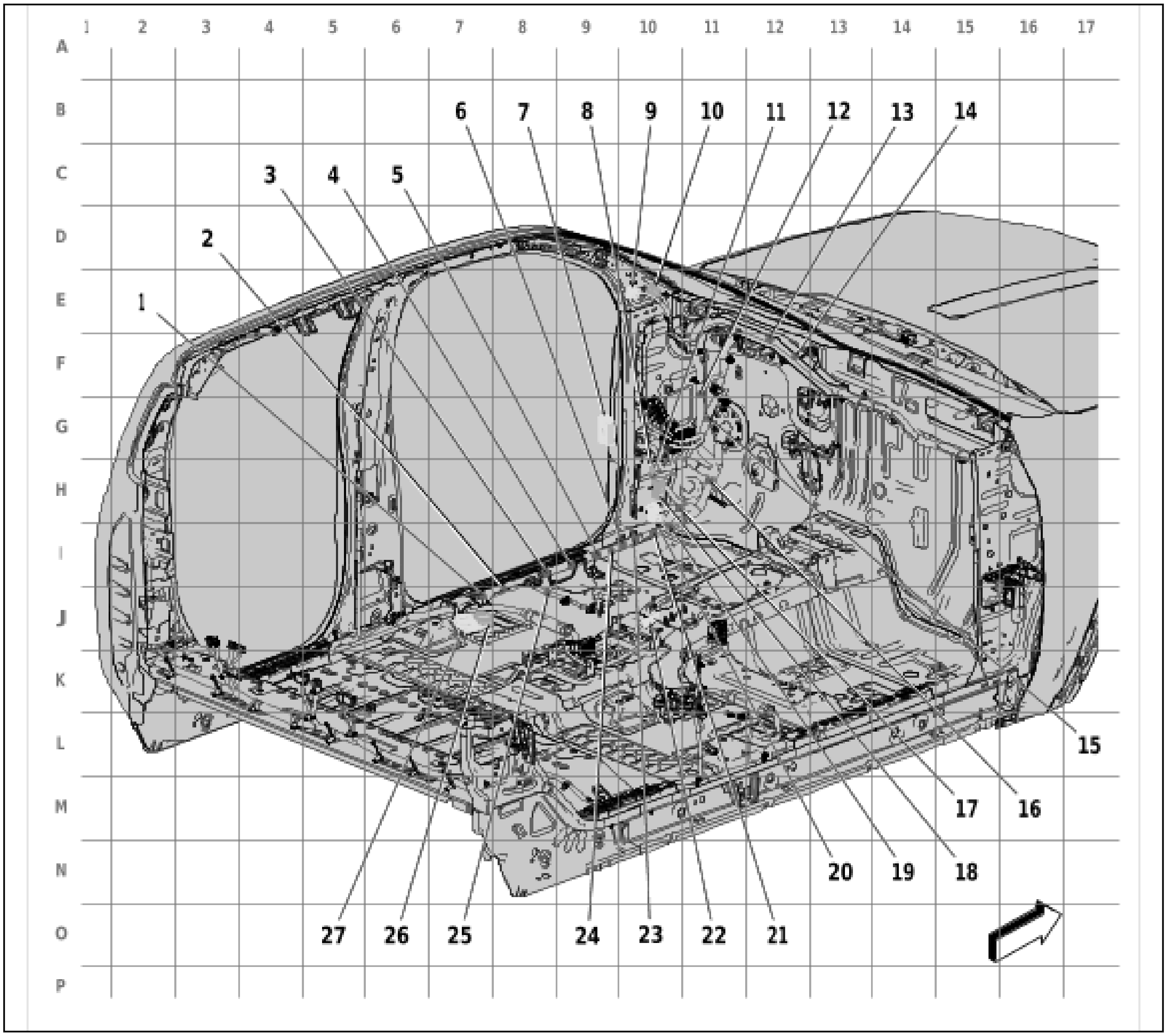
Floor Console Harness Routing



6178582

Items
(1) X367 Instrument Panel Wiring Harness to Body Wiring Harness
(2) J218 Instrument Panel Wiring Harness
(3) J217 Instrument Panel Wiring Harness
(4) J216 Instrument Panel Wiring Harness
(5) J215 Instrument Panel Wiring Harness
(6) J331 Front Floor Console Wiring Harness
(7) X304 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness Extension Harness
(8) X305 Instrument Panel Wiring Harness to Front Floor Console Wiring Harness
(9) J330 Front Floor Console Wiring Harness

Body Harness Routing - Left Front of Passenger Compartment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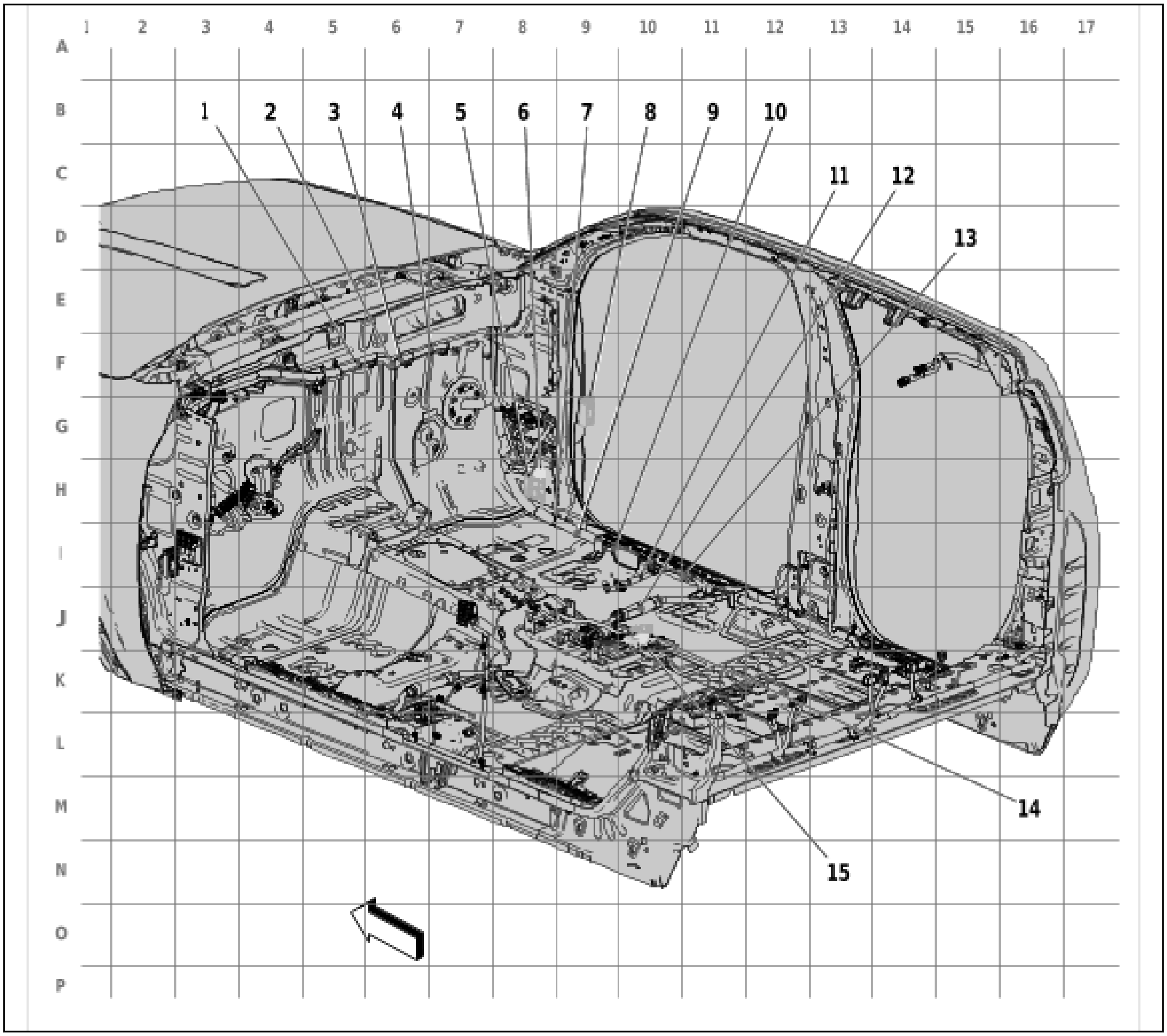
6178583

Items
(1) J312 Body Wiring Harness
(2) J311 Body Wiring Harness
(3) J309 Body Wiring Harness
(4) J308 Body Wiring Harness
(5) J307 Body Wiring Harness
(6) J305 Body Wiring Harness
(7) X303 Body Wiring Harness to Front Side Door Door Wiring Harness - Driver
(8) X399 Instrument Panel Wiring Harness to Body Wiring Harness
(9) X402C Roof Wiring Harness to Body Wiring Harness
(10) X401 Roof Wiring Harness to Body Wiring Harness

Items
(11) X380 Instrument Panel Wiring Harness to Body Wiring Harness (UV2/UXA-UVB)
(12) J200 Body Wiring Harness
(13) J201 Body Wiring Harness
(14) J202 Body Wiring Harness
(15) J300 Body Wiring Harness
(16) J207 Body Wiring Harness
(17) J301 Body Wiring Harness
(18) X300 Body Wiring Harness to Instrument Panel Wiring Harness
(19) J302 Body Wiring Harness
(20) X301 Body Wiring Harness to Instrument Panel Wiring Harness
(21) J303 Body Wiring Harness
(22) X367 Instrument Panel Wiring Harness to Body Wiring Harness
(23) J304 Body Wiring Harness
(24) J306 Body Wiring Harness
(25) J310 Body Wiring Harness
(26) X302A Front Seat Wiring Harness - Driver to Body Wiring Harness
(27) X302B Front Seat Wiring Harness - Driver to Body Wiring Harness

Body Harness Routing - Right Front of Passenger Compartment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6178584

Items

(1) J203 Body Wiring Harness

(2) J204 Body Wiring Harness

(3) J205 Body Wiring Harness

(4) J206 Body Wiring Harness

(5) X400 Instrument Panel Wiring Harness to Body Wiring Harness

(6) X499C Body Wiring Harness to Instrument Panel Wiring Harness (U2K)

(7) J320 Body Wiring Harness

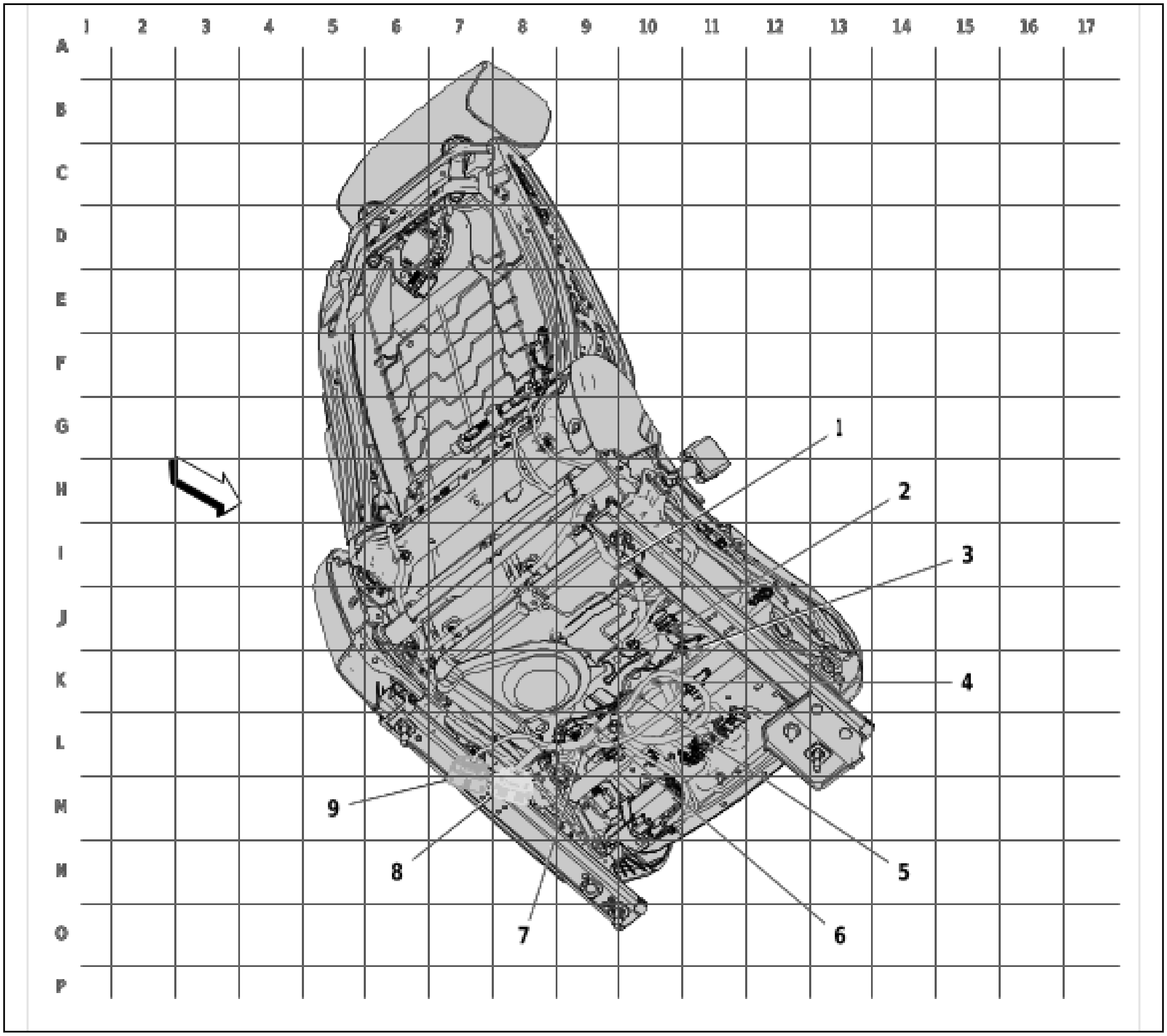
(8) X404 Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger

(9) J321 Body Wiring Harness

(10) J322 Body Wiring Harness

Items
(11) J324 Body Wiring Harness
(12) J325 Body Wiring Harness
(13) J323 Body Wiring Harness
(14) X402A Front Seat Wiring Harness - Passenger to Body Wiring Harness
(15) X402B Front Seat Wiring Harness - Passenger to Body Wiring Harness

Front Seat Wiring Harness - Driver Routing



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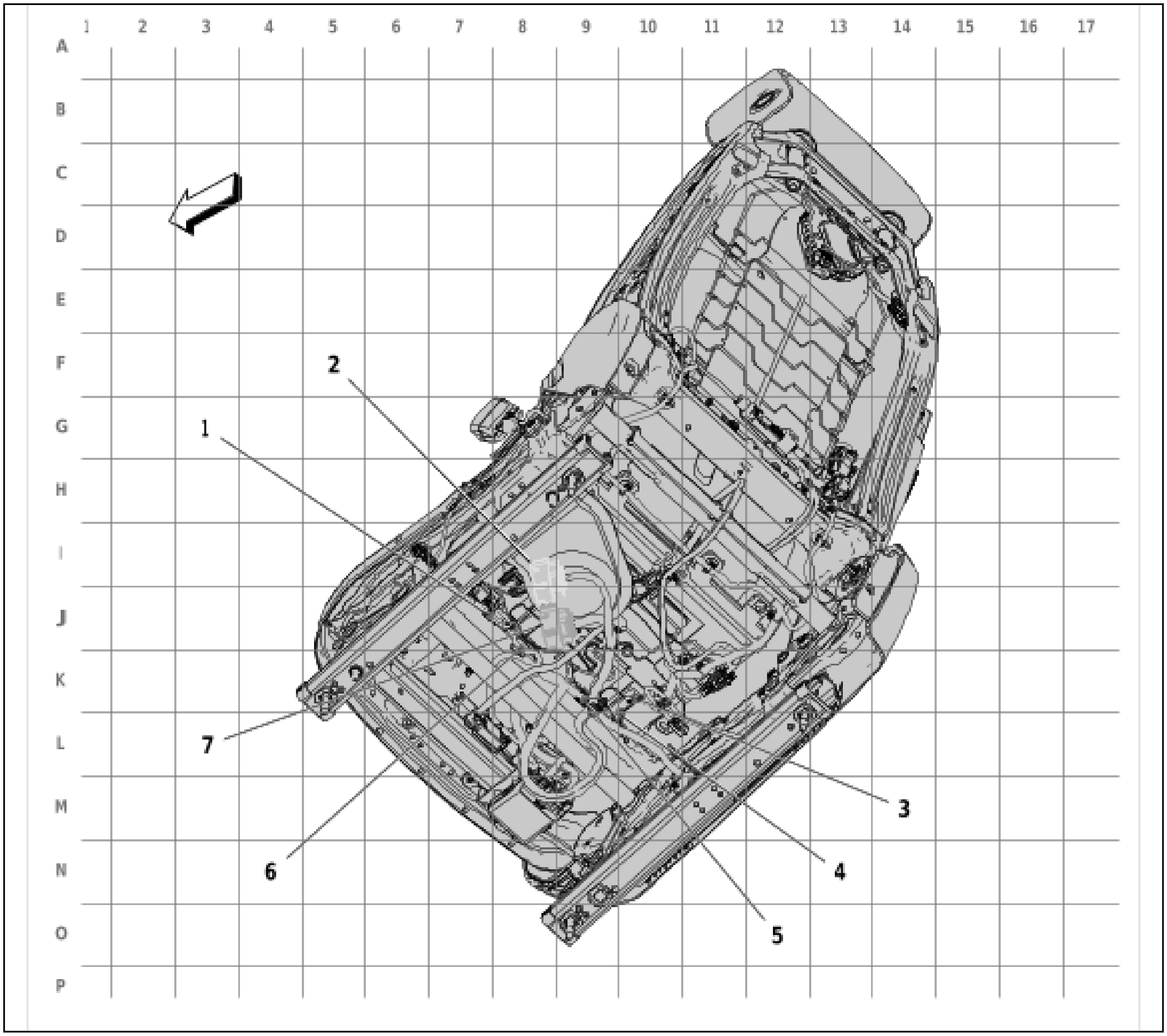
Items
(1) J345 Front Seat Wiring Harness - Driver
(2) J346 Front Seat Wiring Harness - Driver
(3) J344 Front Seat Wiring Harness - Driver
(4) J343 Front Seat Wiring Harness - Driver

Items
(5) J342 Front Seat Wiring Harness - Driver
(6) J341 Front Seat Wiring Harness - Driver
(7) J340 Front Seat Wiring Harness - Driver
(8) X302A Front Seat Wiring Harness - Driver to Body Wiring Harness
(9) X302B Front Seat Wiring Harness - Driver to Body Wiring Harness

Front Seat Wiring Harness - Passenger Routing

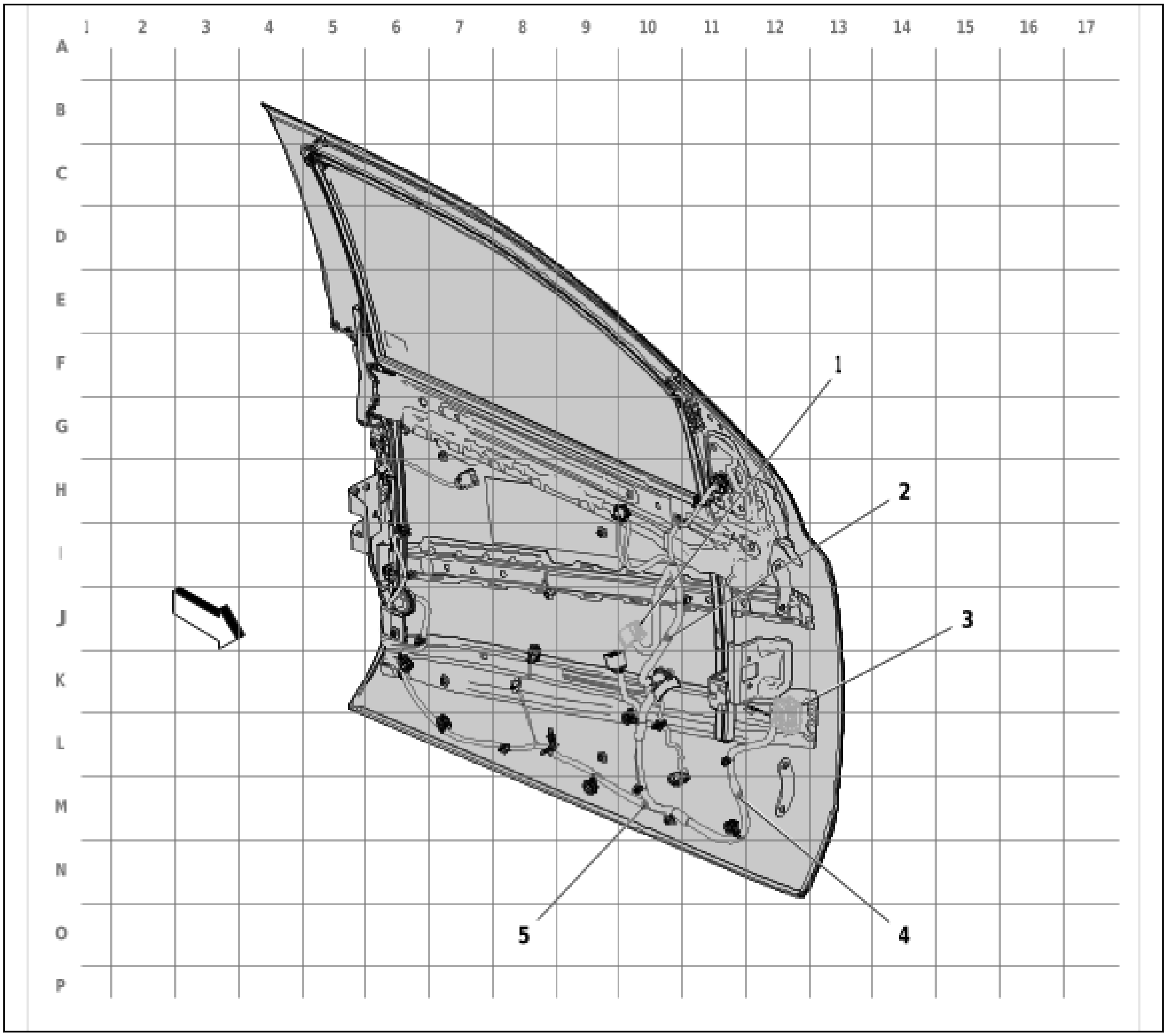


6178586

Items
(1) J348 Front Seat Wiring Harness - Passenger
(2) X402B Front Seat Wiring Harness - Passenger to Body Wiring Harness
(3) J349 Front Seat Wiring Harness - Passenger

Items
(4) J351 Front Seat Wiring Harness - Passenger
(5) J350 Front Seat Wiring Harness - Passenger
(6) J347 Front Seat Wiring Harness - Passenger
(7) X402A Front Seat Wiring Harness - Passenger to Body Wiring Harness

Driver Door Harness Routing (UQ3)

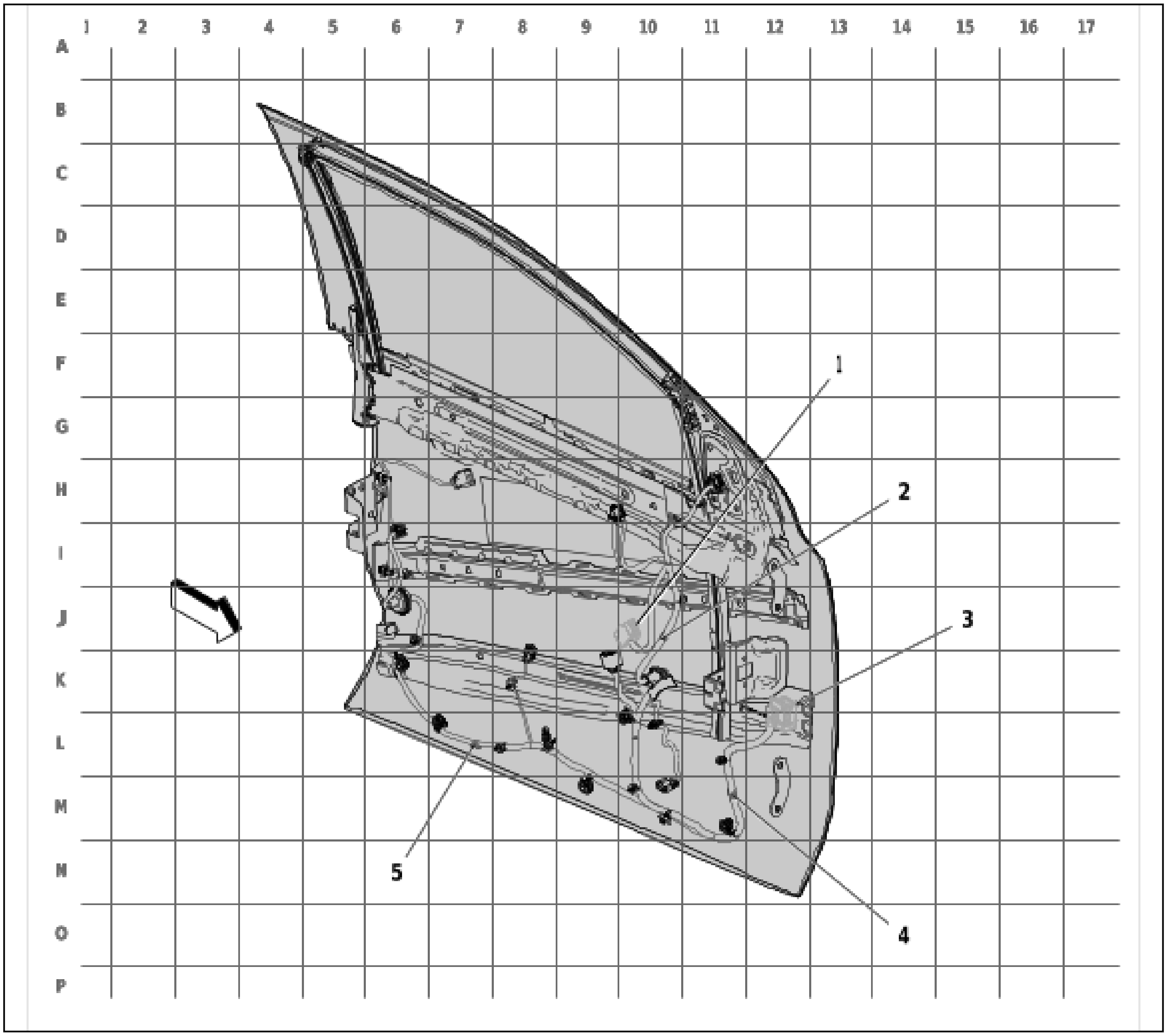


6178587

Items
(1) X393 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver
(2) J500 Front Side Door Door Wiring Harness - Driver
(3) X303 Body Wiring Harness to Front Side Door Door Wiring Harness - Driver

Items
(4) J501 Front Side Door Door Wiring Harness - Driver
(5) J502 Front Side Door Door Wiring Harness - Driver

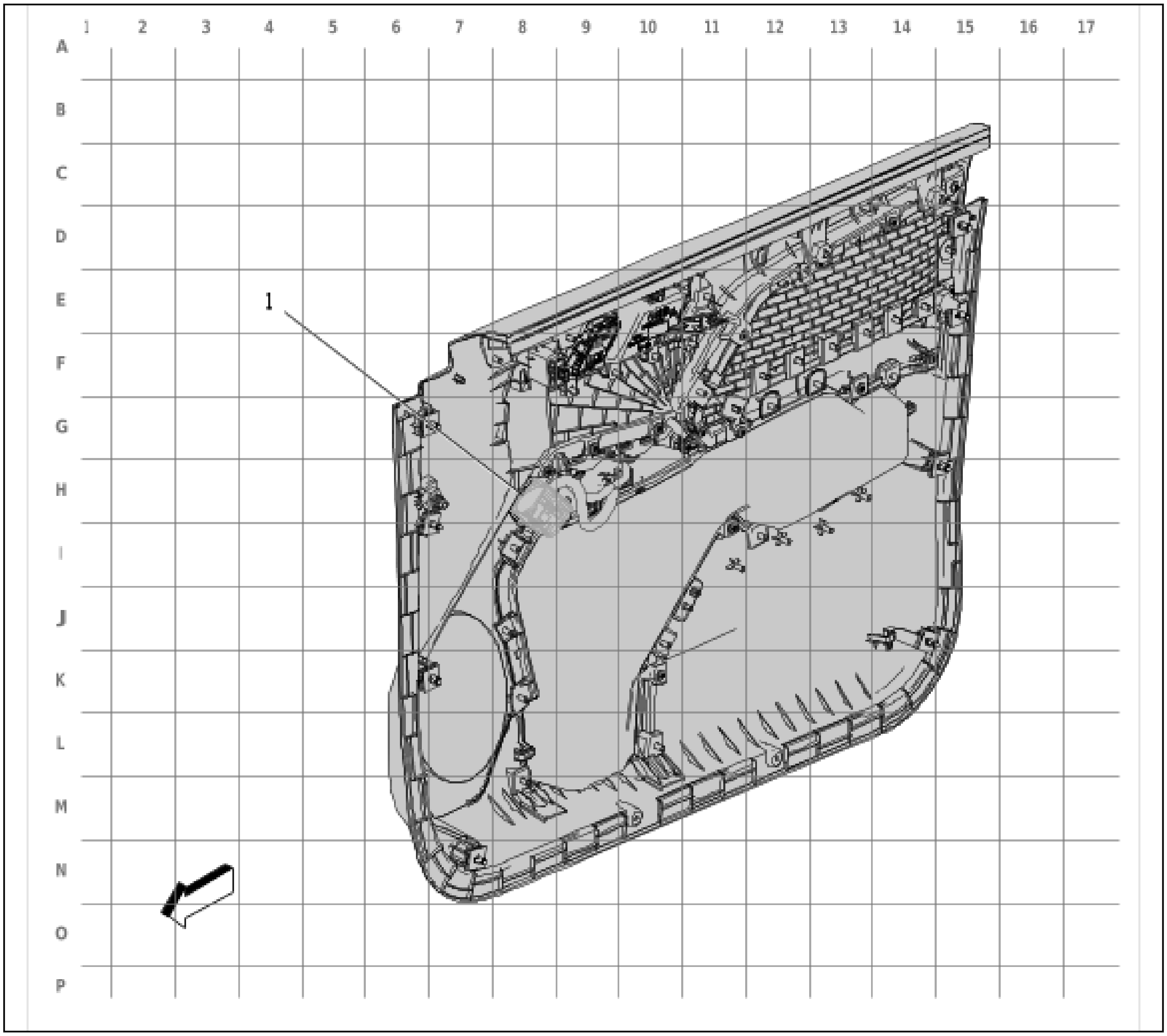
Driver Door Harness Routing (UQA)



6178588

Items
(1) X393 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver
(2) J500 Front Side Door Door Wiring Harness - Driver
(3) X303 Body Wiring Harness to Front Side Door Door Wiring Harness - Driver
(4) J501 Front Side Door Door Wiring Harness - Driver
(5) J502 Front Side Door Door Wiring Harness - Driver

Driver Door Trim Harness Routing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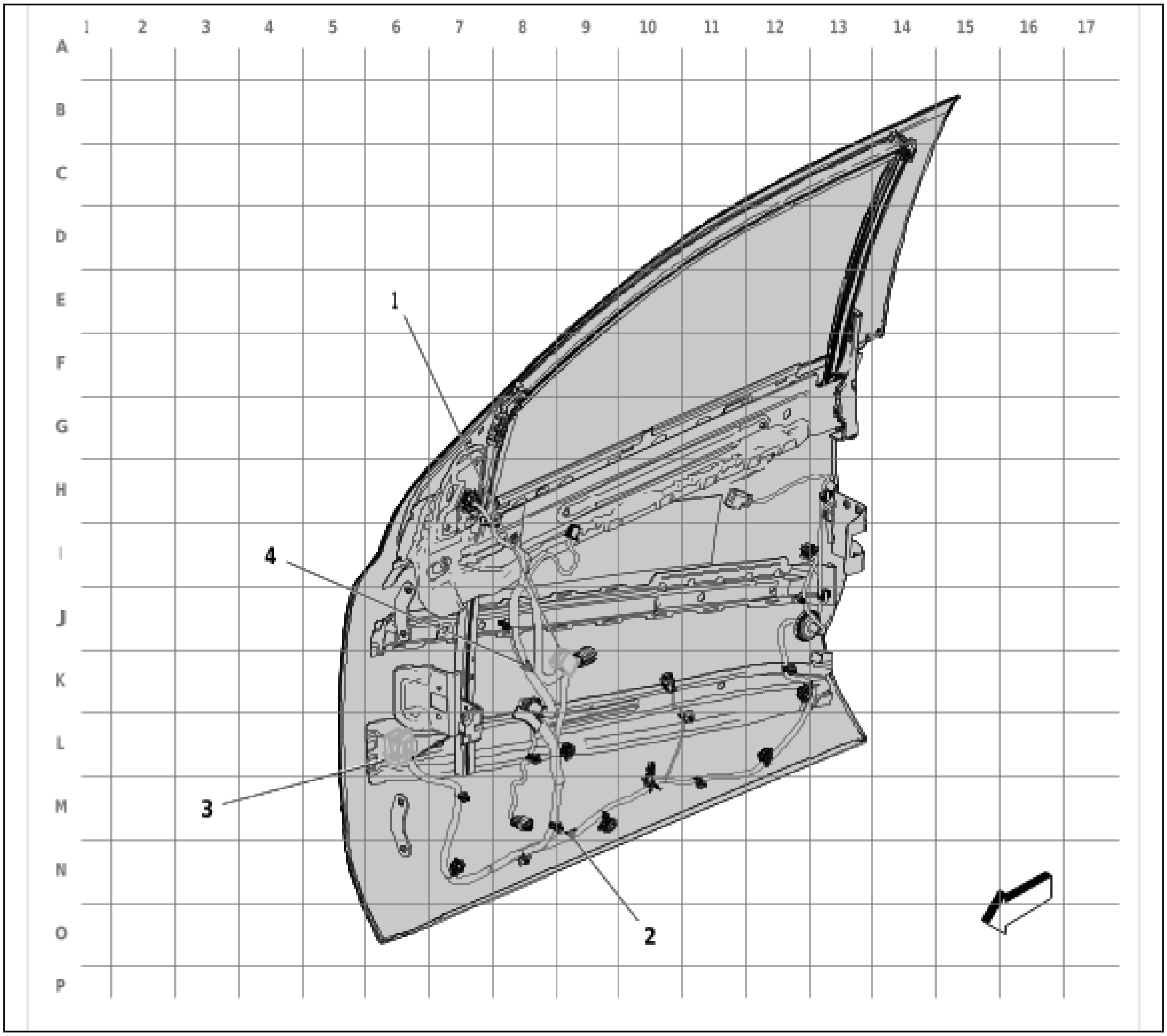
6178589

Items
(1) X393 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver

Passenger Door Harness Routing (UQ3)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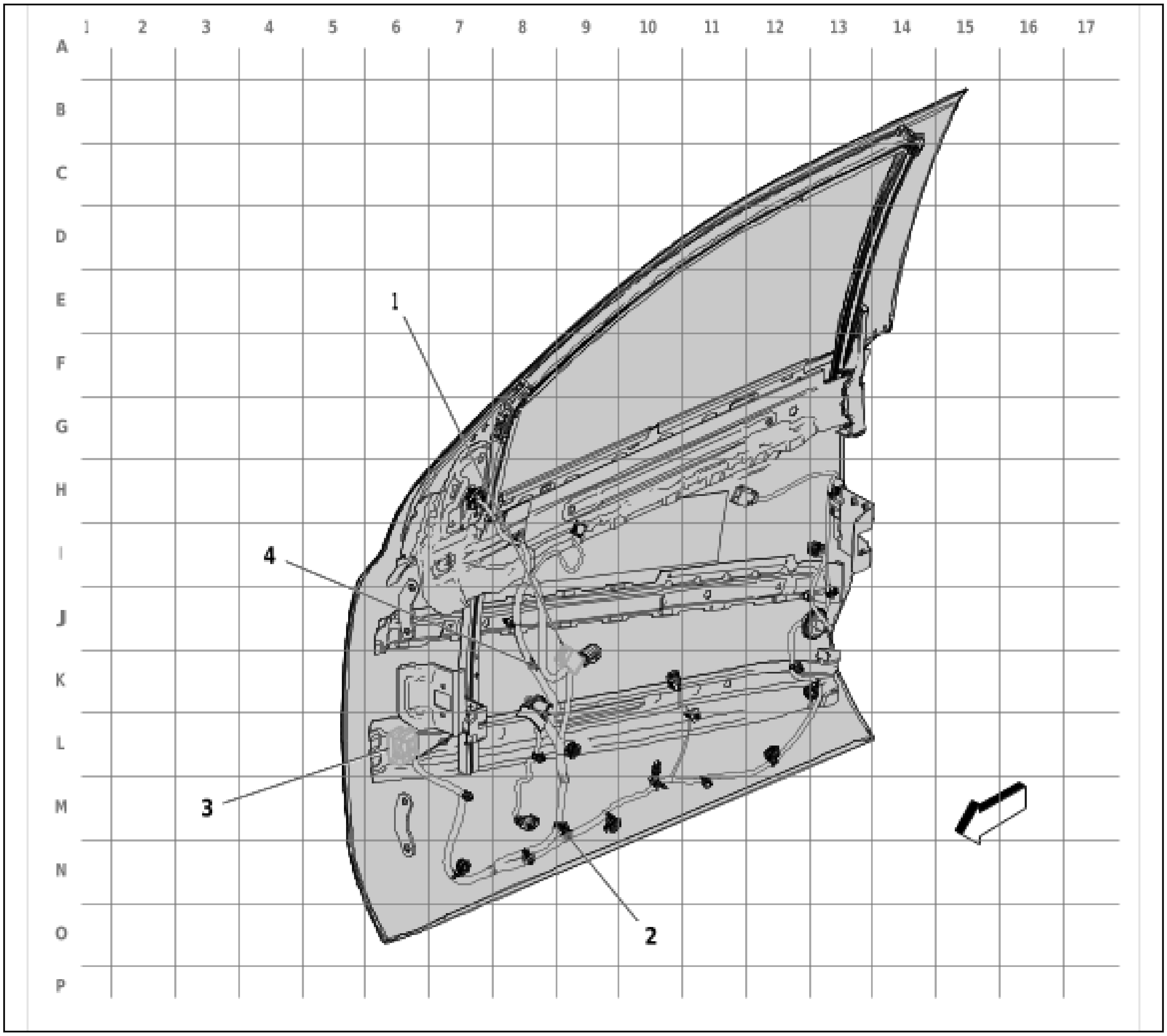
6178590

Items
(1) X494 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right
(2) J601 Front Side Door Door Wiring Harness - Passenger
(3) X404 Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger
(4) J600 Front Side Door Door Wiring Harness - Passenger

Passenger Door Harness Routing (UQA)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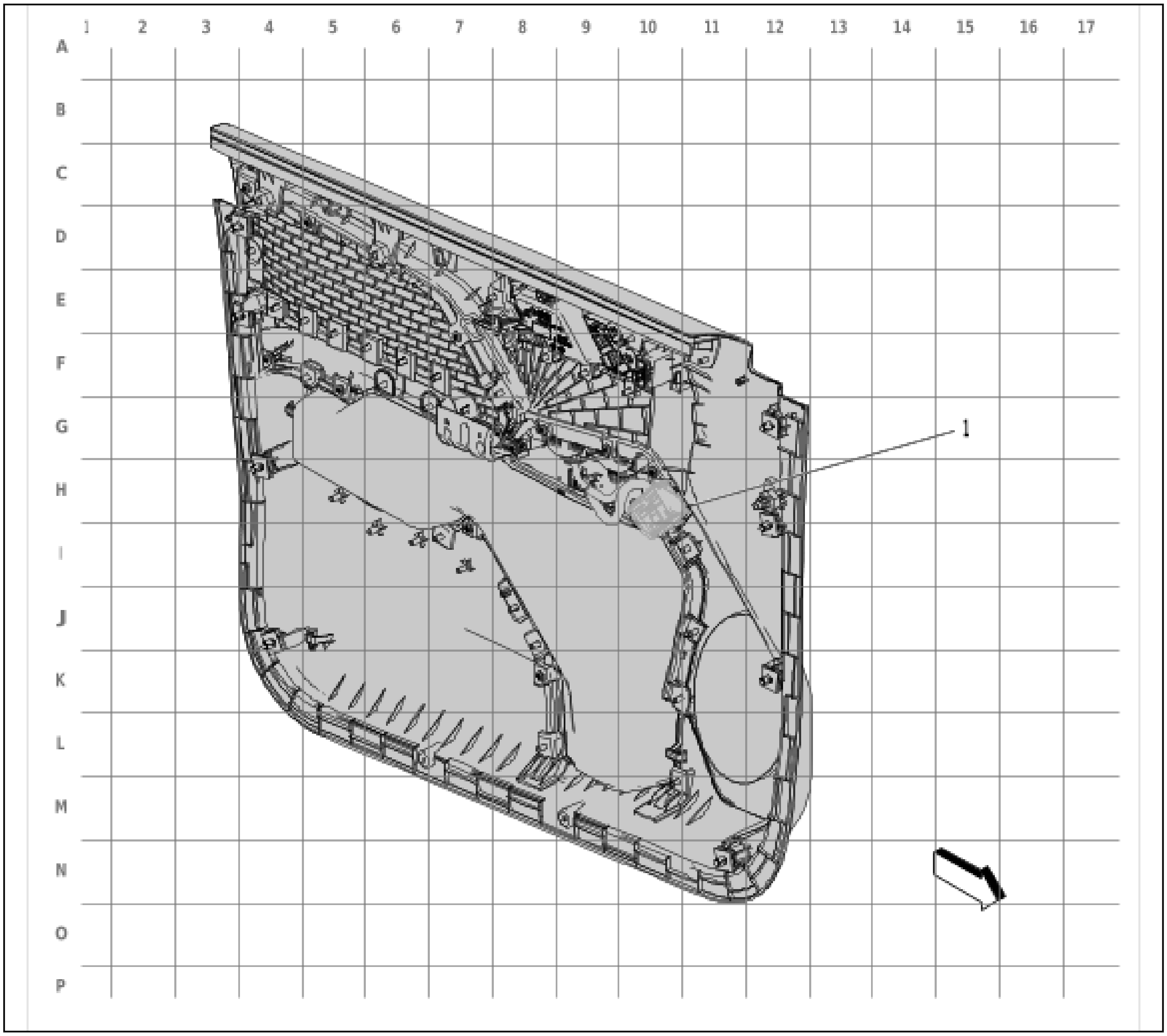
6178591

Items
(1) X494 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right
(3) X404 Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger
(4) J600 Front Side Door Door Wiring Harness - Passenger

Passenger Door Trim Harness Routing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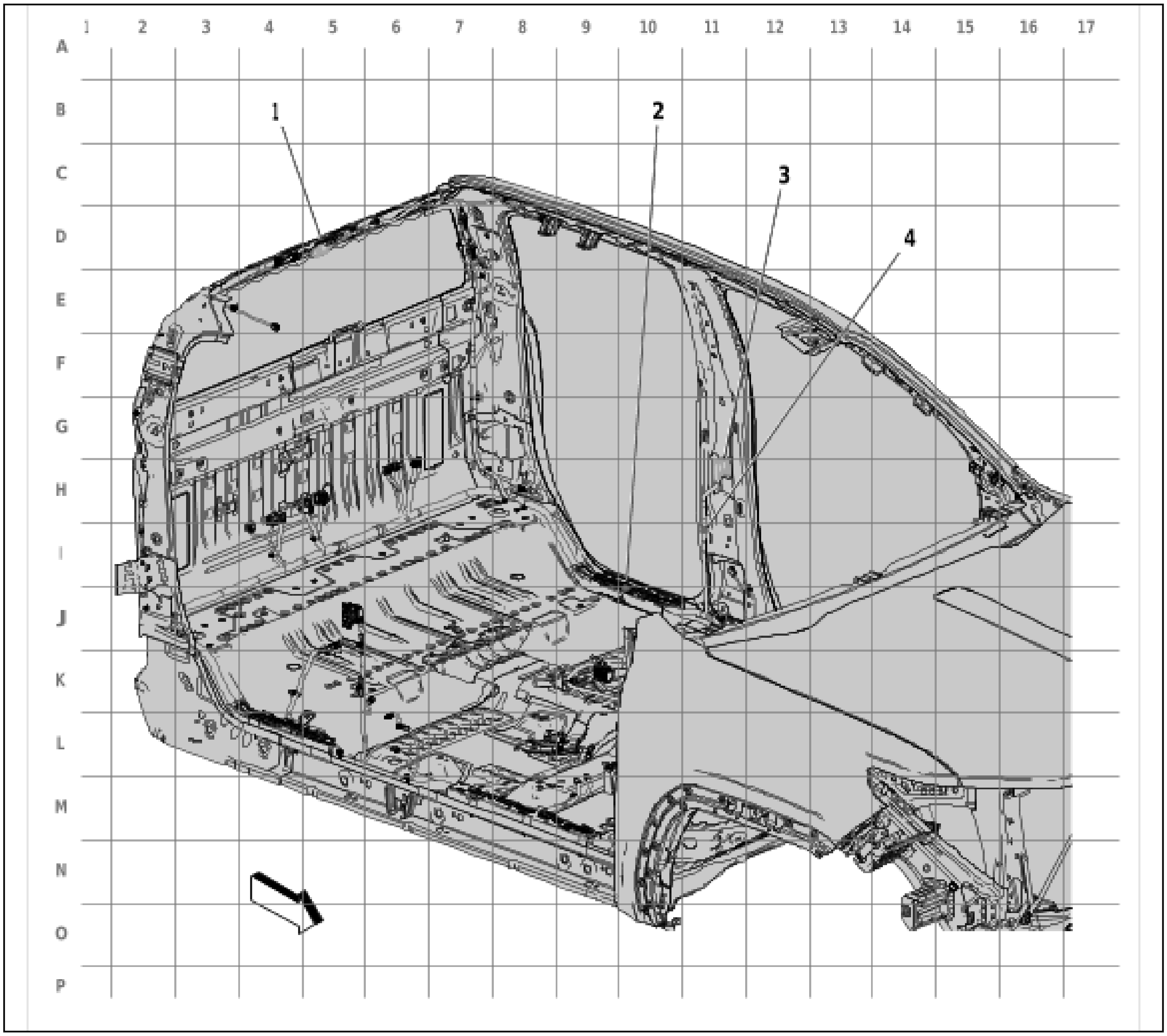
6178592

Items
(1) X494 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right

Body Harness Routing - Left Rear of Passenger Compartment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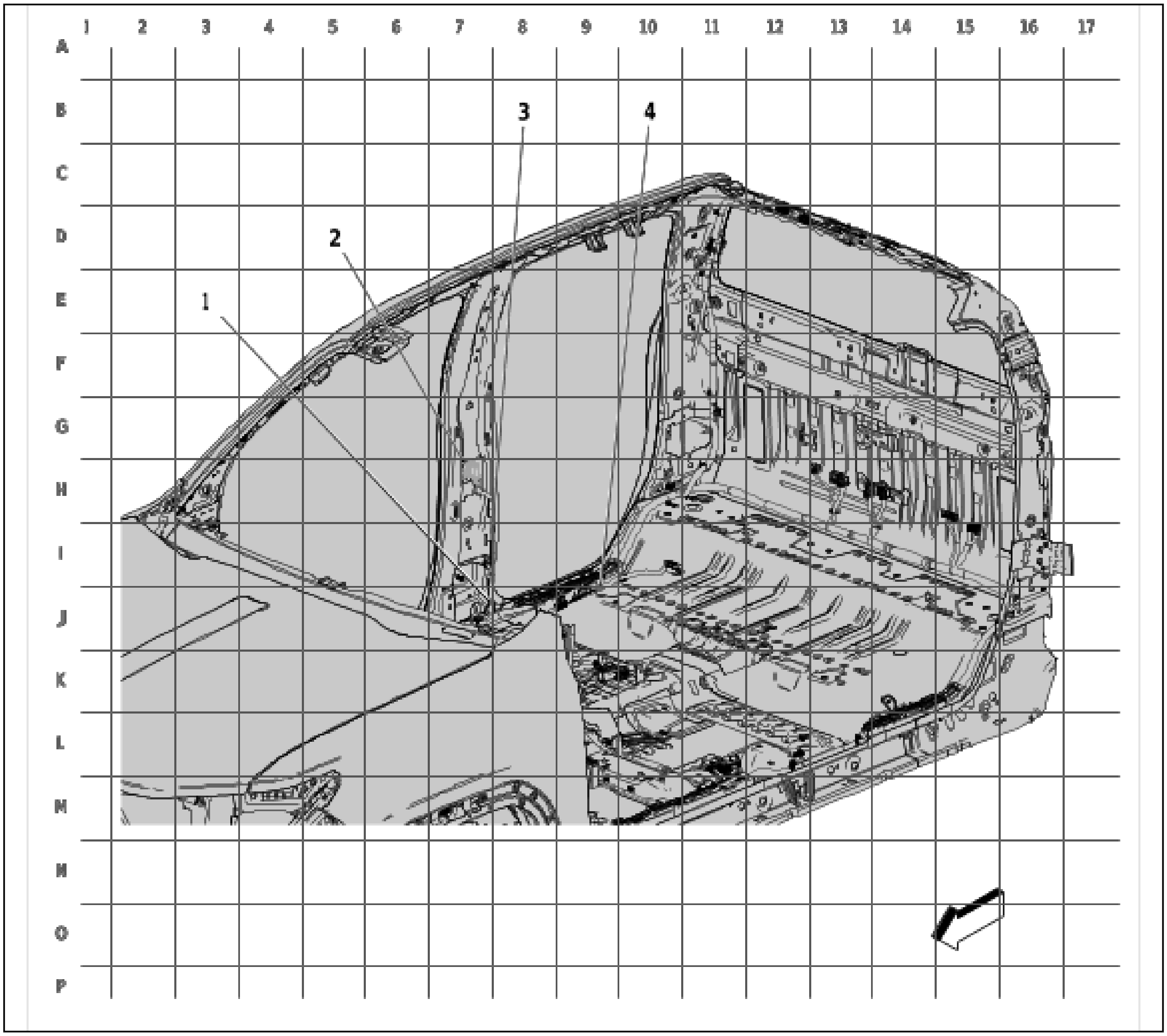
6178593

Items
(1) X500 Roof Wiring Harness to Body Wiring Harness
(2) J314 Body Wiring Harness
(3) X503 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness
(4) J313 Body Wiring Harness

Body Harness Routing - Center and Right of Passenger Compartment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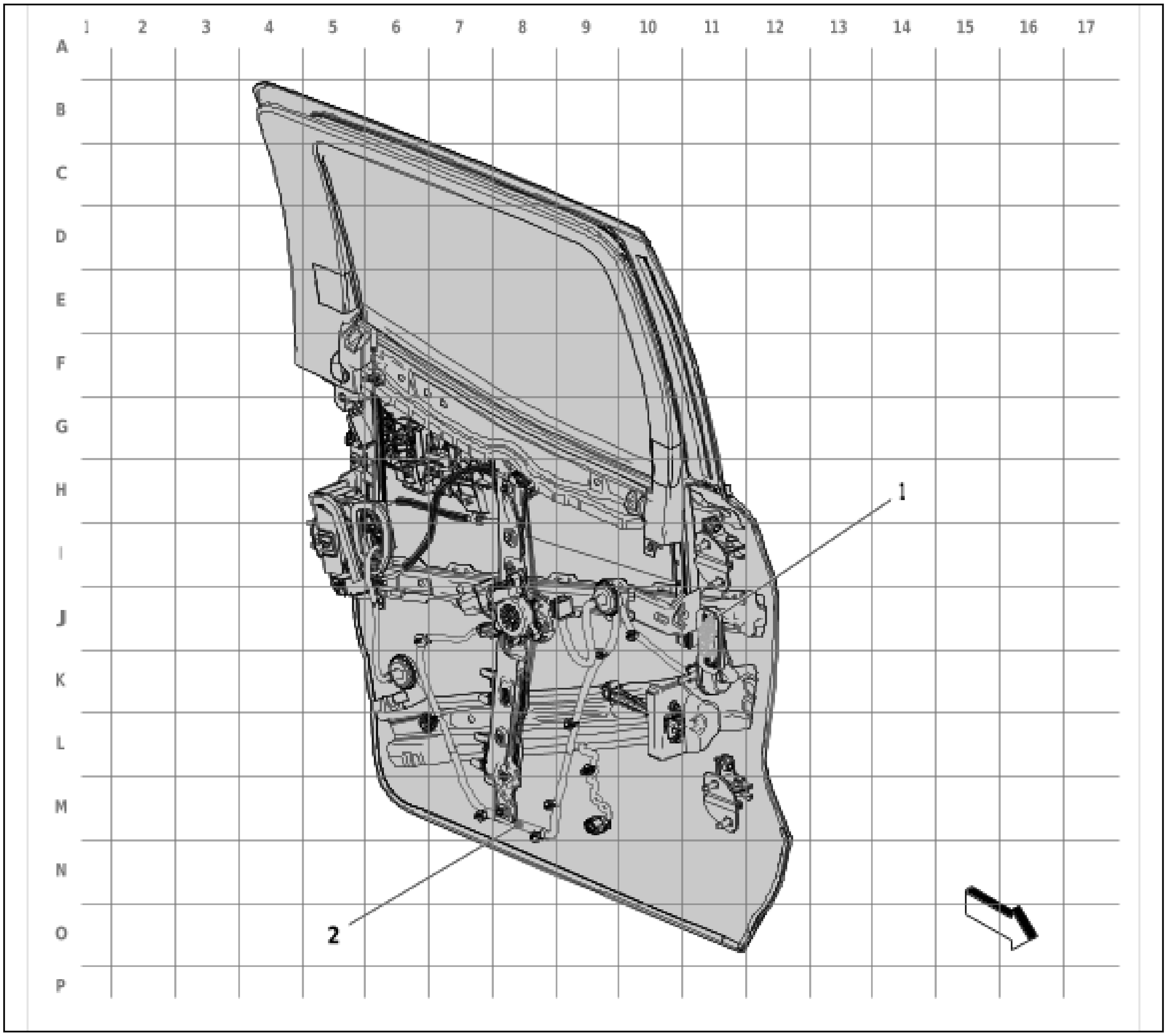
6178594

Items
(1) J326 Body Wiring Harness
(2) X604 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness
(3) J327 Body Wiring Harness
(4) J328 Body Wiring Harness

Left Rear Door Harness Routing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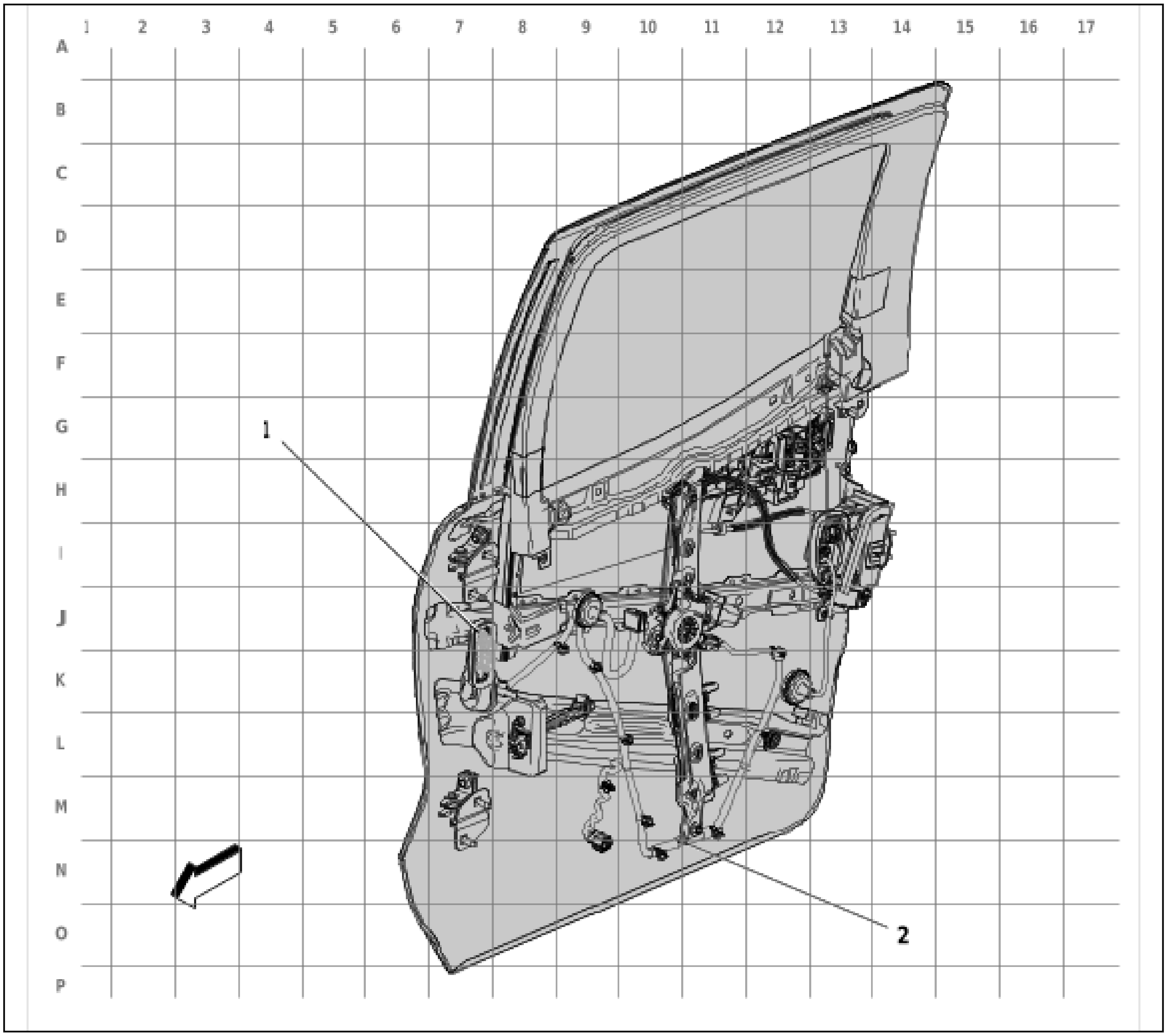
6178595

Items
(1) X503 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness
(2) J700 Rear Side Door Door Wiring Harness - Left

Right Rear Door Harness Routing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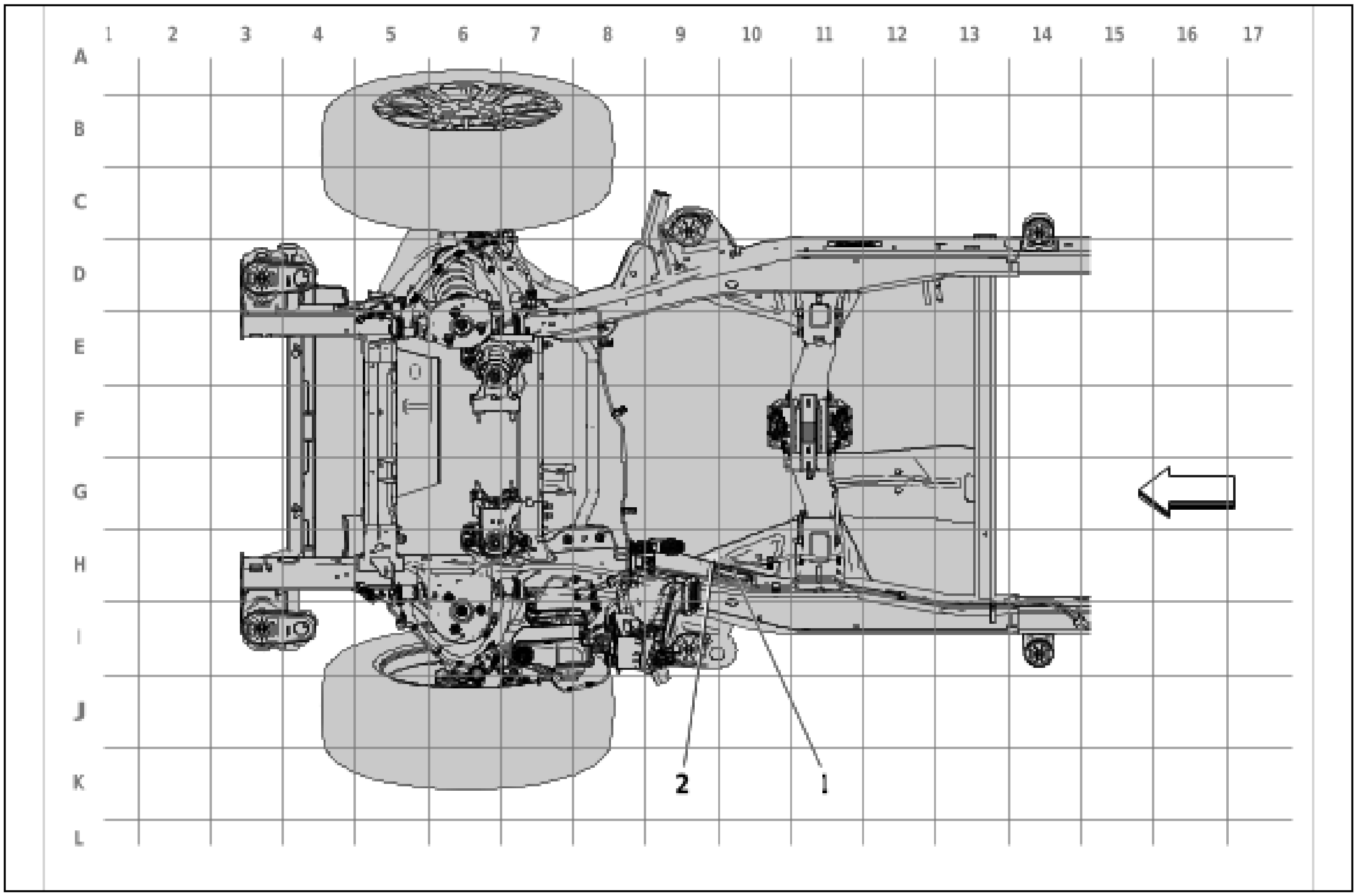
Items
(1) X604 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness
(2) J800 Rear Side Door Door Wiring Harness - Right

Vehicle Underbody Camera Harness Routing (UXA)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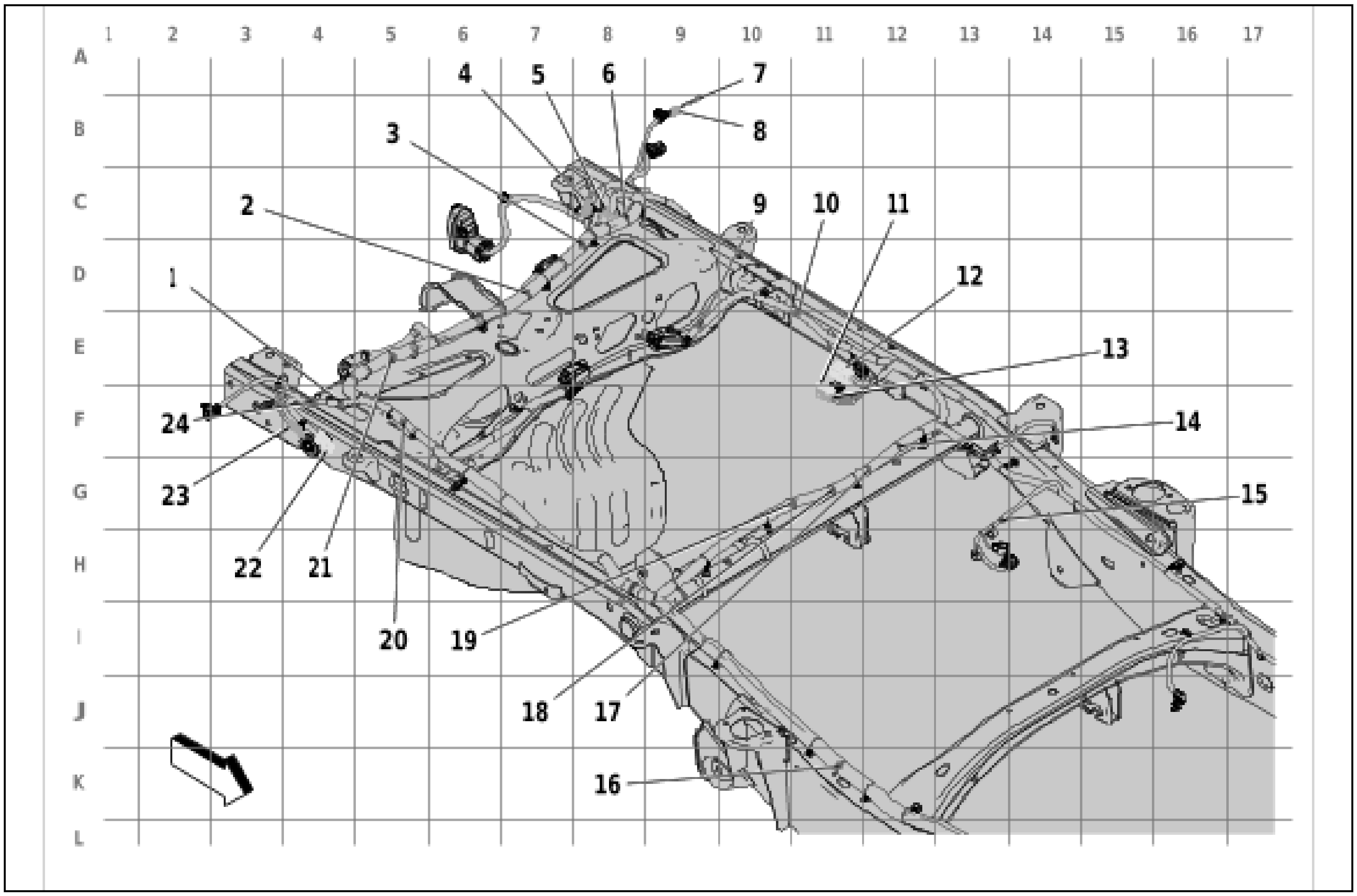
6178597

Items
(1) X372 Front View Underbody Camera Jumper Wiring Harness to Rearview Camera Wiring Harness (UXA)
(2) X371 Rearview Camera Wiring Harness Jumper to Rearview Camera Wiring Harness (UXA)

Chassis Harness Routing - Rear

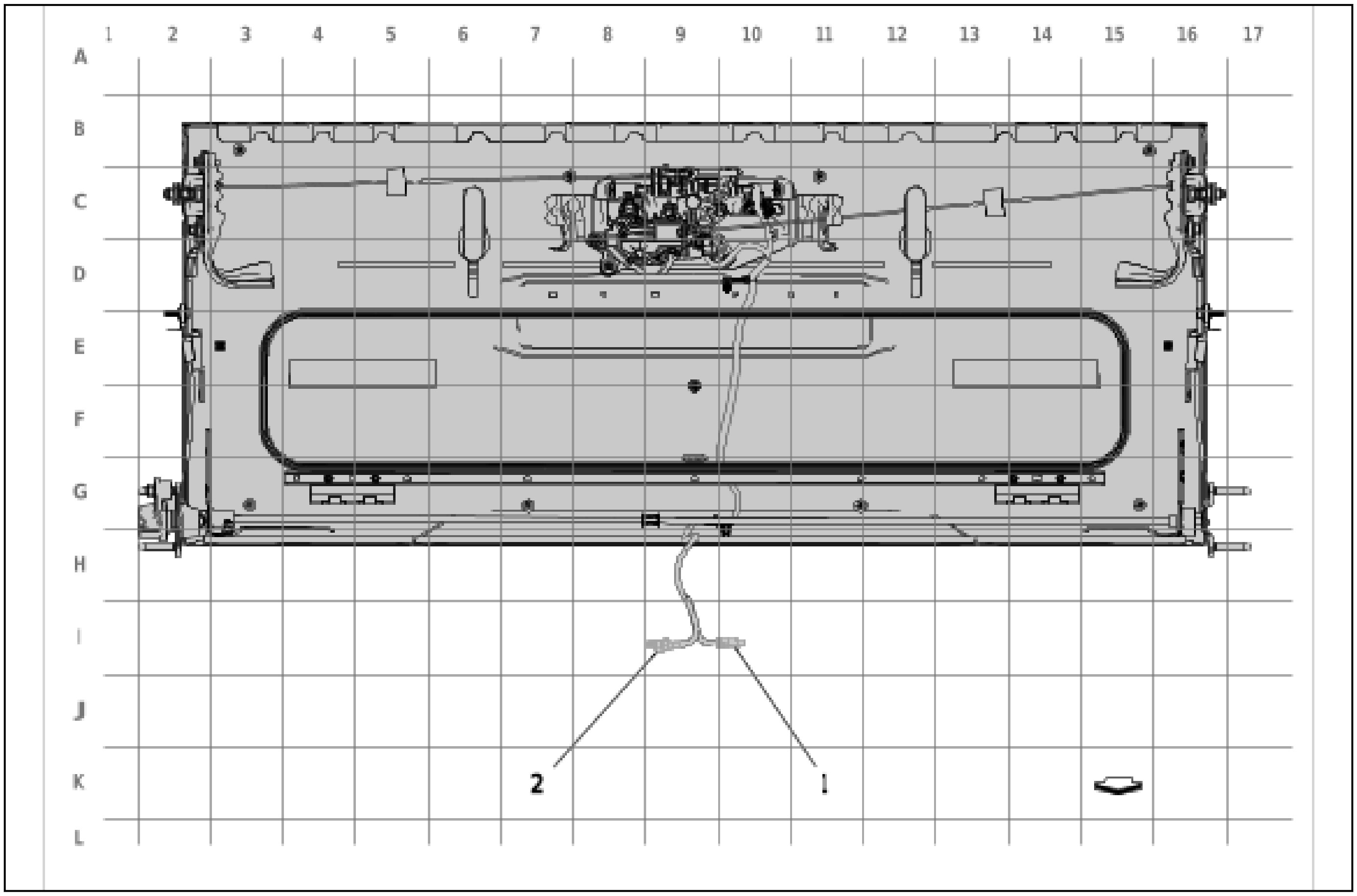


6747361

Items
(1) J408 Chassis Wiring Harness
(2) J411 Chassis Wiring Harness
(3) J414 Chassis Wiring Harness
(4) X933 Chassis Wiring Harness to Rear Object Alarm Sensor Wiring Harness
(5) X700 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness
(6) J415 Chassis Wiring Harness
(7) W26 Blunt Cut - Cargo Lamps Provision
(8) X382 Chassis Wiring Harness to Chassis Wiring Harness (S0Y)
(9) J410 Chassis Wiring Harness
(10) J409 Chassis Wiring Harness
(11) X777 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (-G94)
(12) X904A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(13) X788 Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness (G94)
(14) J404 Chassis Wiring Harness
(15) J416 Chassis Wiring Harness
(16) J400 Chassis Wiring Harness
(17) J403 Chassis Wiring Harness

Items
(18) J402 Chassis Wiring Harness
(19) J401 Chassis Wiring Harness
(20) J406 Chassis Wiring Harness
(21) J407 Chassis Wiring Harness
(22) X820 Body Rear Wiring Harness to Chassis Wiring Harness (KC9)
(23) X808 Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(24) J413 Chassis Wiring Harness

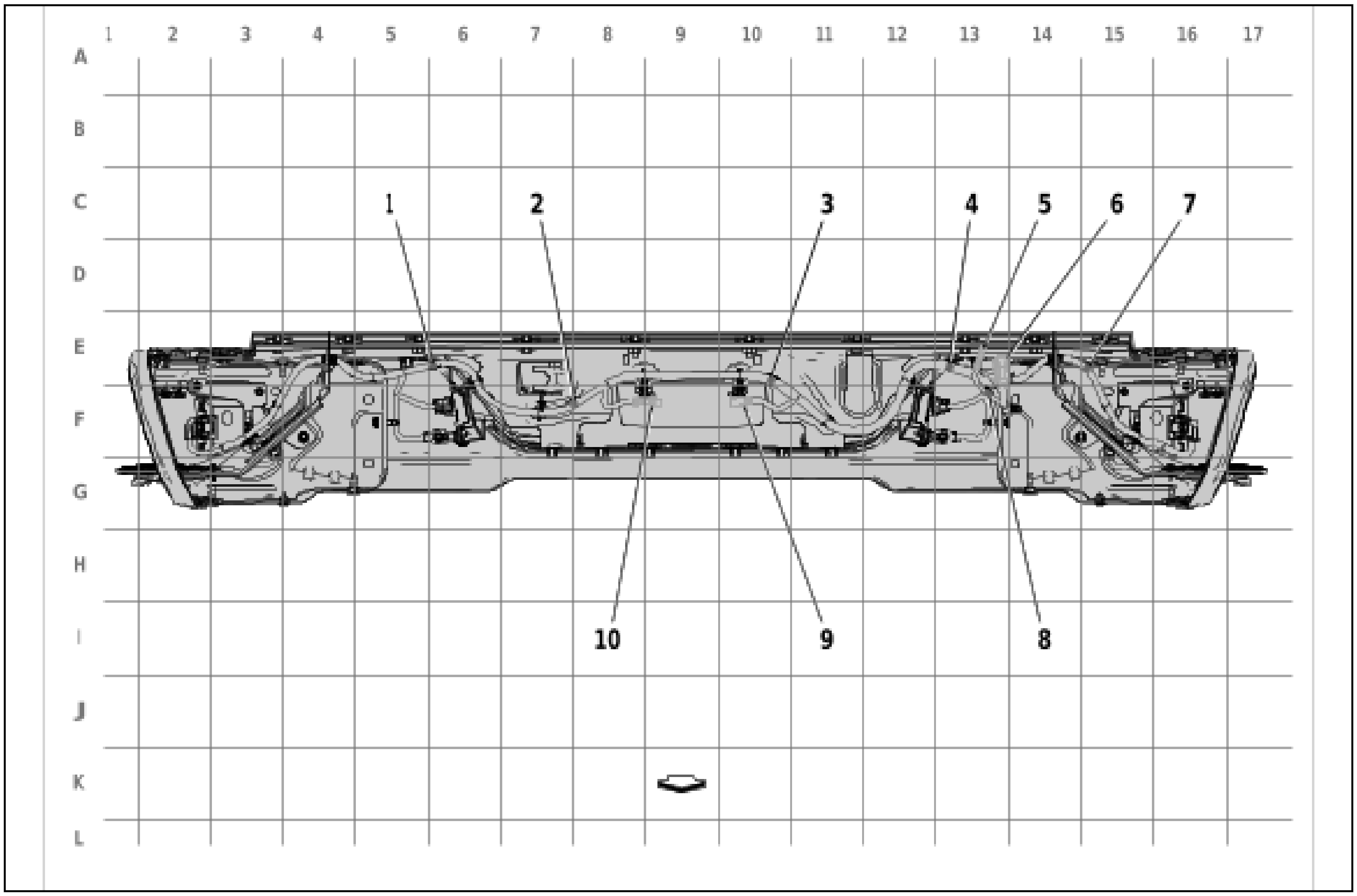
Endgate Harness Routing



6178599

Items
(1) X955 Rear Object Alarm Sensor Wiring Harness to Liftgate Jumper Wiring Harness
(2) X950 Liftgate Jumper Wiring Harness to Rear Object Alarm Sensor Wiring Harness

Rear Fascia Harness Routing

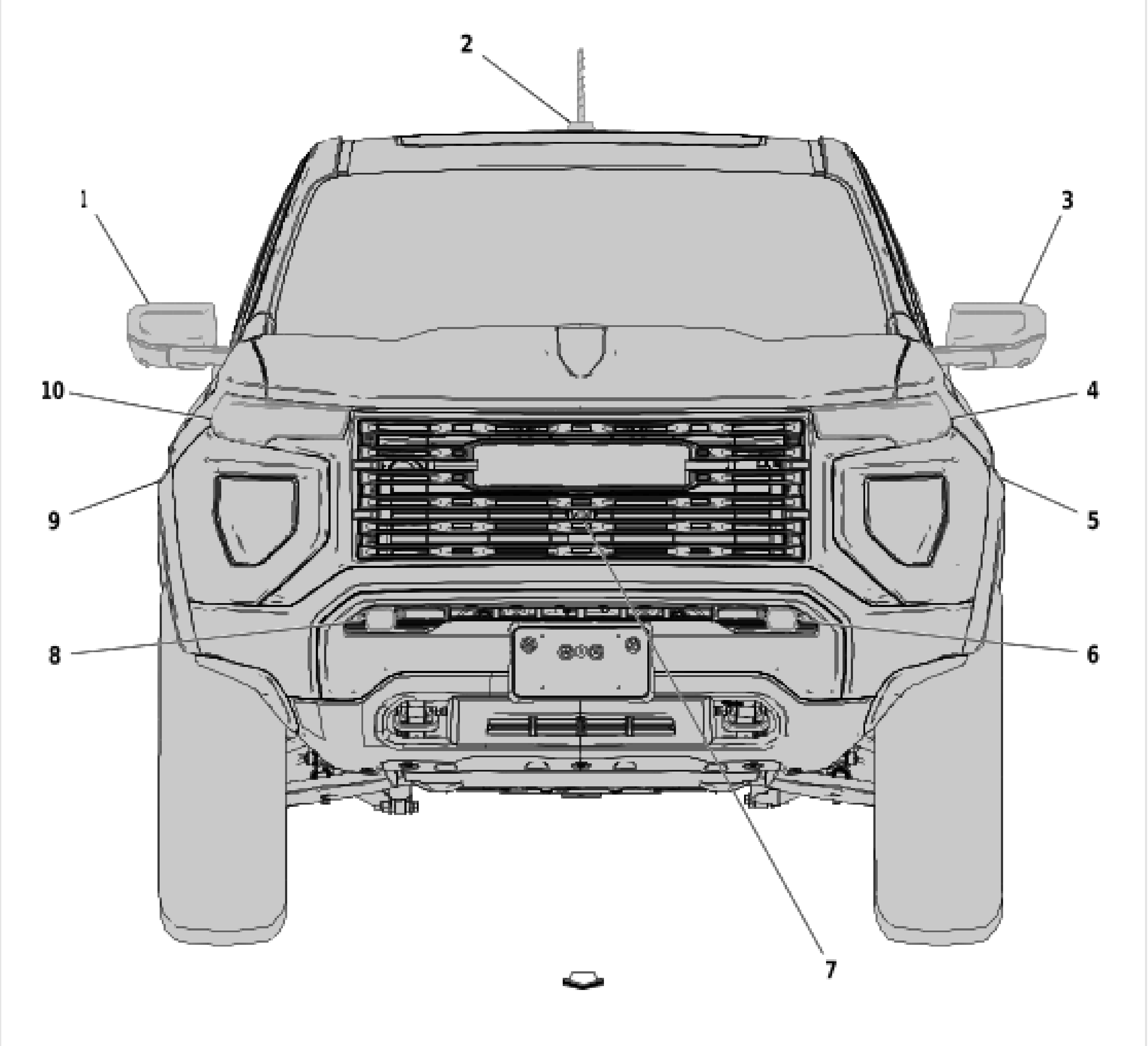


6178600

Items
(1) J900 Rear Object Alarm Sensor Wiring Harness
(2) J901 Rear Object Alarm Sensor Wiring Harness
(3) J902 Rear Object Alarm Sensor Wiring Harness
(4) J903 Rear Object Alarm Sensor Wiring Harness
(5) X933 Chassis Wiring Harness to Rear Object Alarm Sensor Wiring Harness
(6) X700 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness
(7) J905 Rear Object Alarm Sensor Wiring Harness
(8) J904 Rear Object Alarm Sensor Wiring Harness
(9) X955 Rear Object Alarm Sensor Wiring Harness to Liftgate Jumper Wiring Harness
(10) X950 Liftgate Jumper Wiring Harness to Rear Object Alarm Sensor Wiring Harness

Component Locator

Front of Vehicle Components

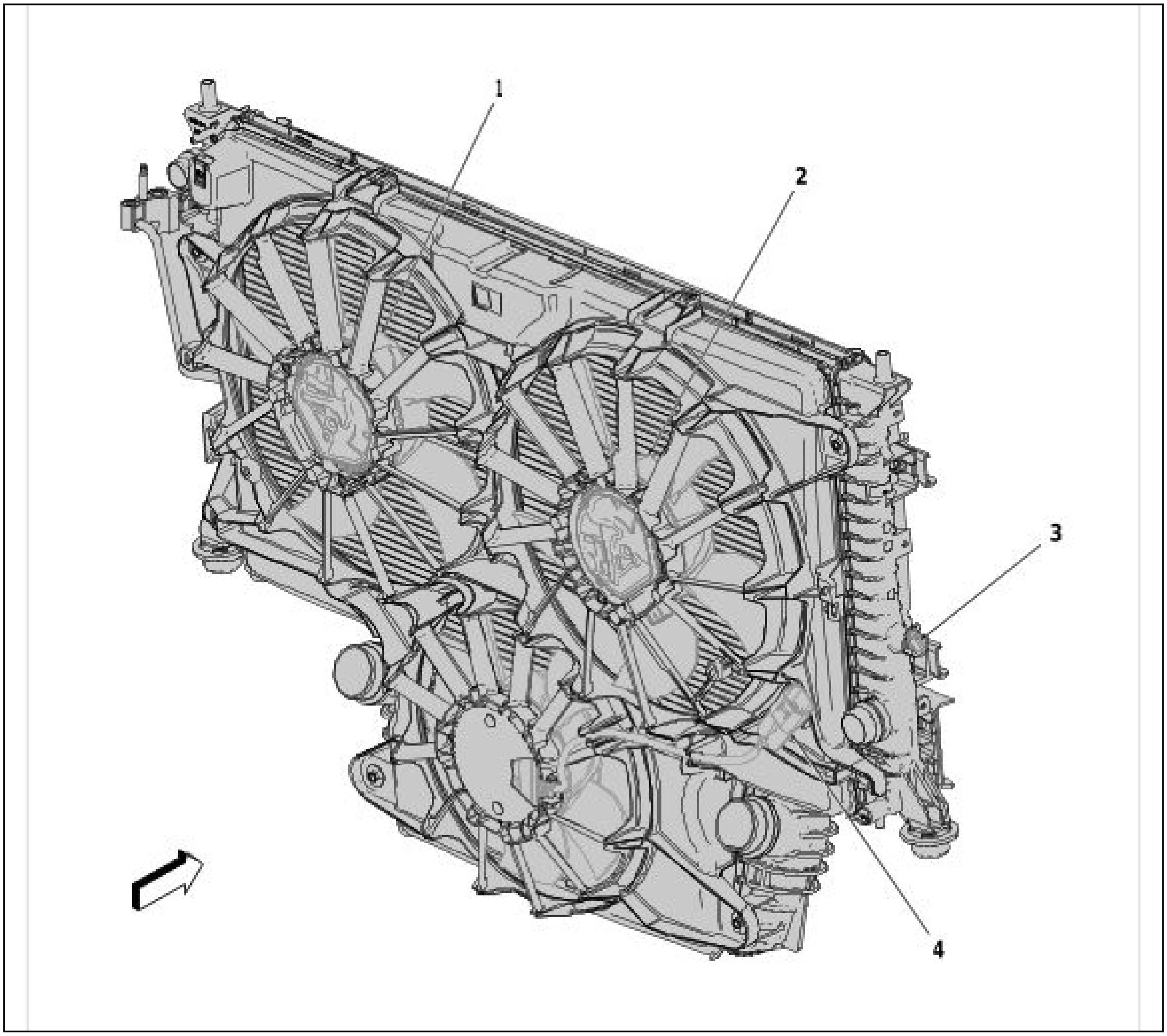


6178209

Items
(1) A9B Outside Rearview Mirror - Passenger
(2) T4P High Frequency Antenna (U2K/(- U2Q - U2K)/U2Q)
(3) A9A Outside Rearview Mirror - Driver
(4) E13LA Front Headlamp - Left
(5) E2LFW Front Side Marker Lamp - Left Wheel Opening Molding
(6) E29LF Front Fog Lamp - Left
(7) B174G Front View Driver Information Camera - Grille (ZR2)
(8) E29RF Front Fog Lamp - Right

Items
(9) E2RFW Front Side Marker Lamp - Right Wheel Opening Molding
(10) E13RA Front Headlamp - Right

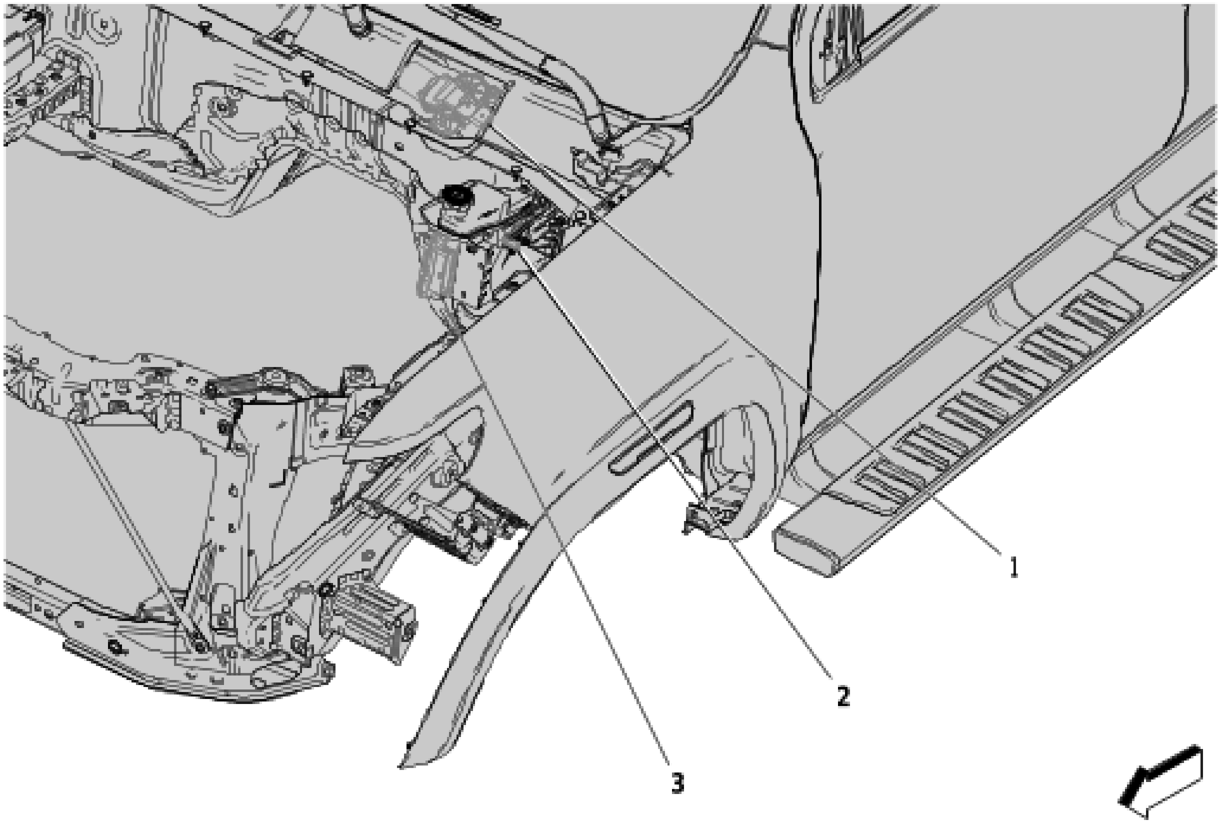
Radiator Support Components



6178210

Items
(1) G10L Cooling Fan Motor - Left
(2) G10R Cooling Fan Motor - Right
(3) B203 Radiator Coolant Temperature Sensor
(4) G10LW Cooling Fan Motor - Lower

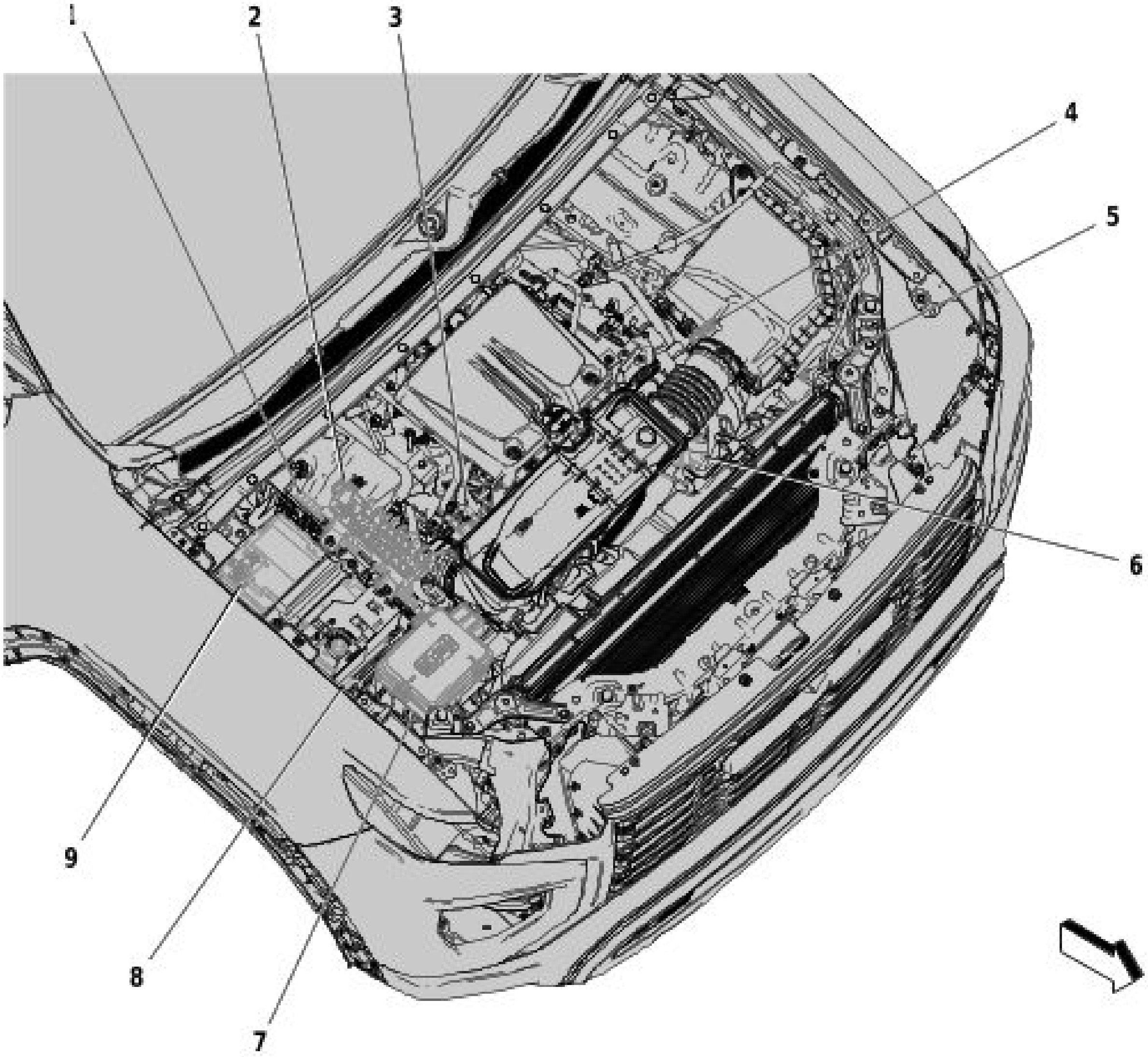
Engine Compartment Components - Left



6178211

Items
(1) M75 Windshield Wiper Motor
(2) B20A Brake Fluid Level Indicator Switch
(3) K160 Brake System Control Module

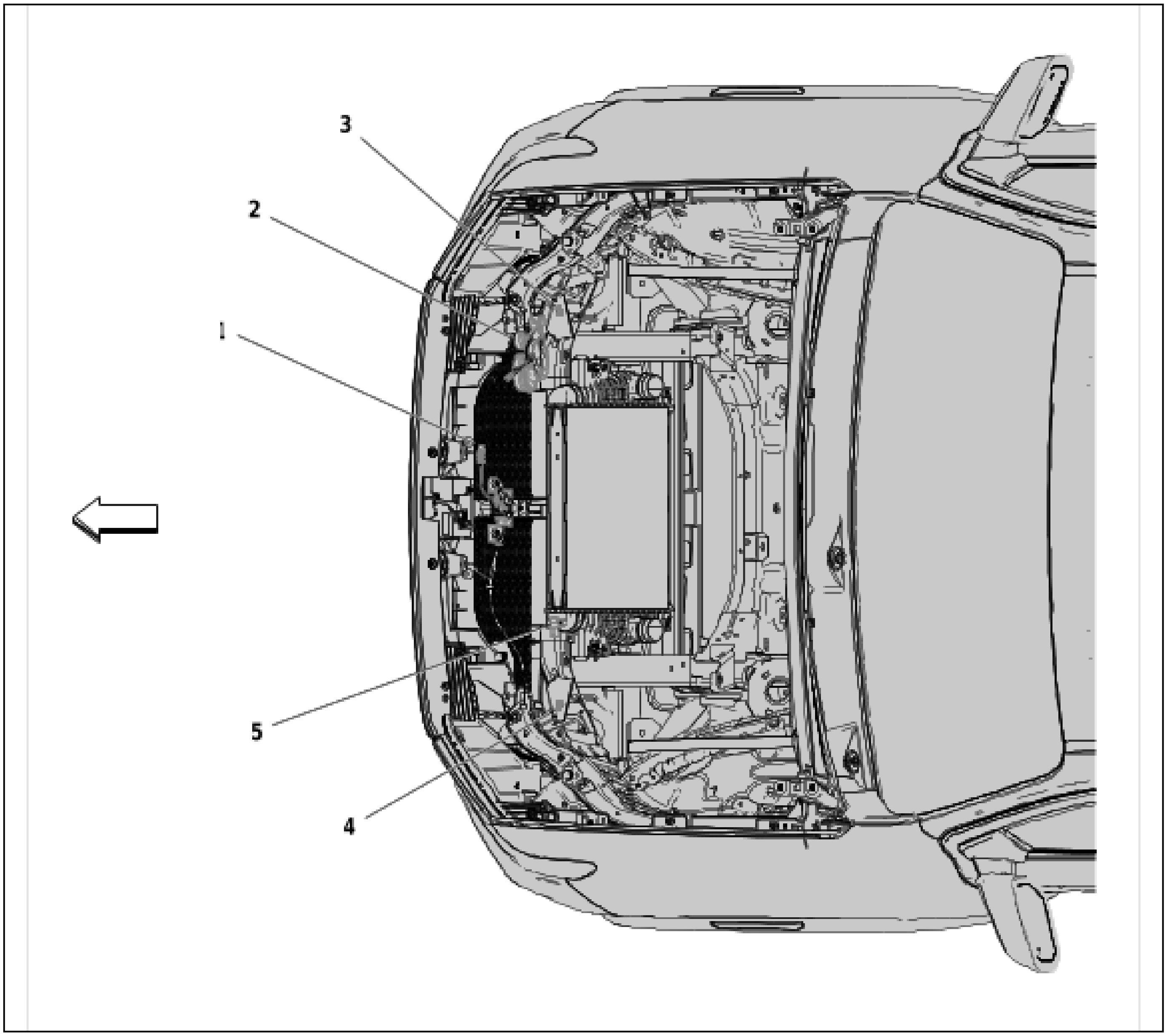
Engine Compartment Components - Right



6178212

Items
(1) K71 Transmission Control Module
(2) X50B Battery Distribution Engine Compartment Fuse Block
(3) Q12 Evaporative Emission Canister Purge Solenoid Valve
(4) B75 Mass Airflow Sensor
(5) B1 Air Conditioning Refrigerant Pressure Sensor
(6) K69 Transfer Case Control Module
(7) X50A Engine Wiring Harness Junction Block
(8) X50B Battery Distribution Engine Compartment Fuse Block
(9) K71 Transmission Control Module

Engine Compartment Components - Top



6178213

Items

(1) B55 Engine Compartment Cover Switch

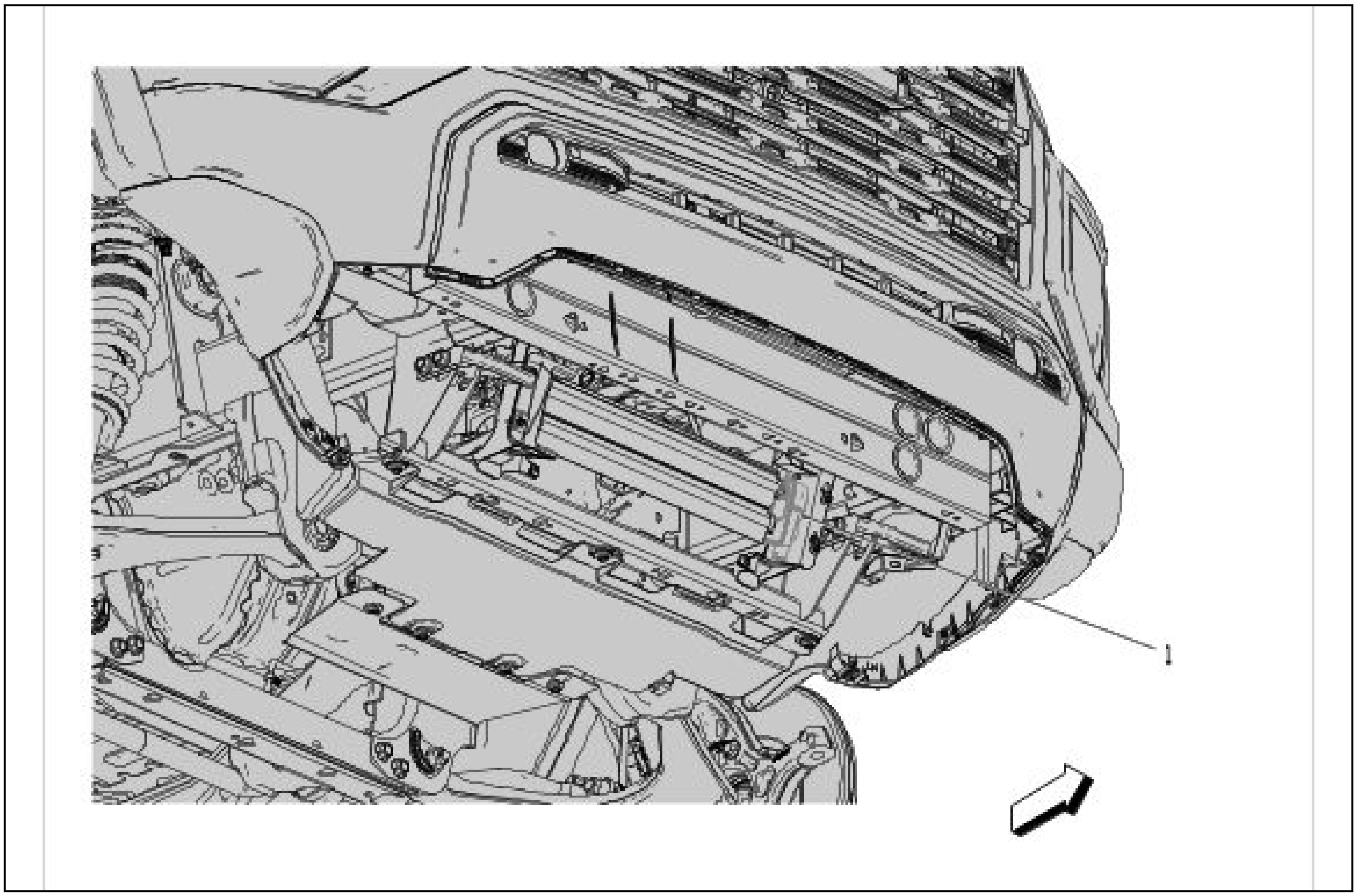
(2) P13 Horn

(3) B58R Airbag Front End Discriminating Sensor - Right

(4) B58L Airbag Front End Discriminating Sensor - Left

(5) B111 Turbocharger/Supercharger Boost Pressure Sensor

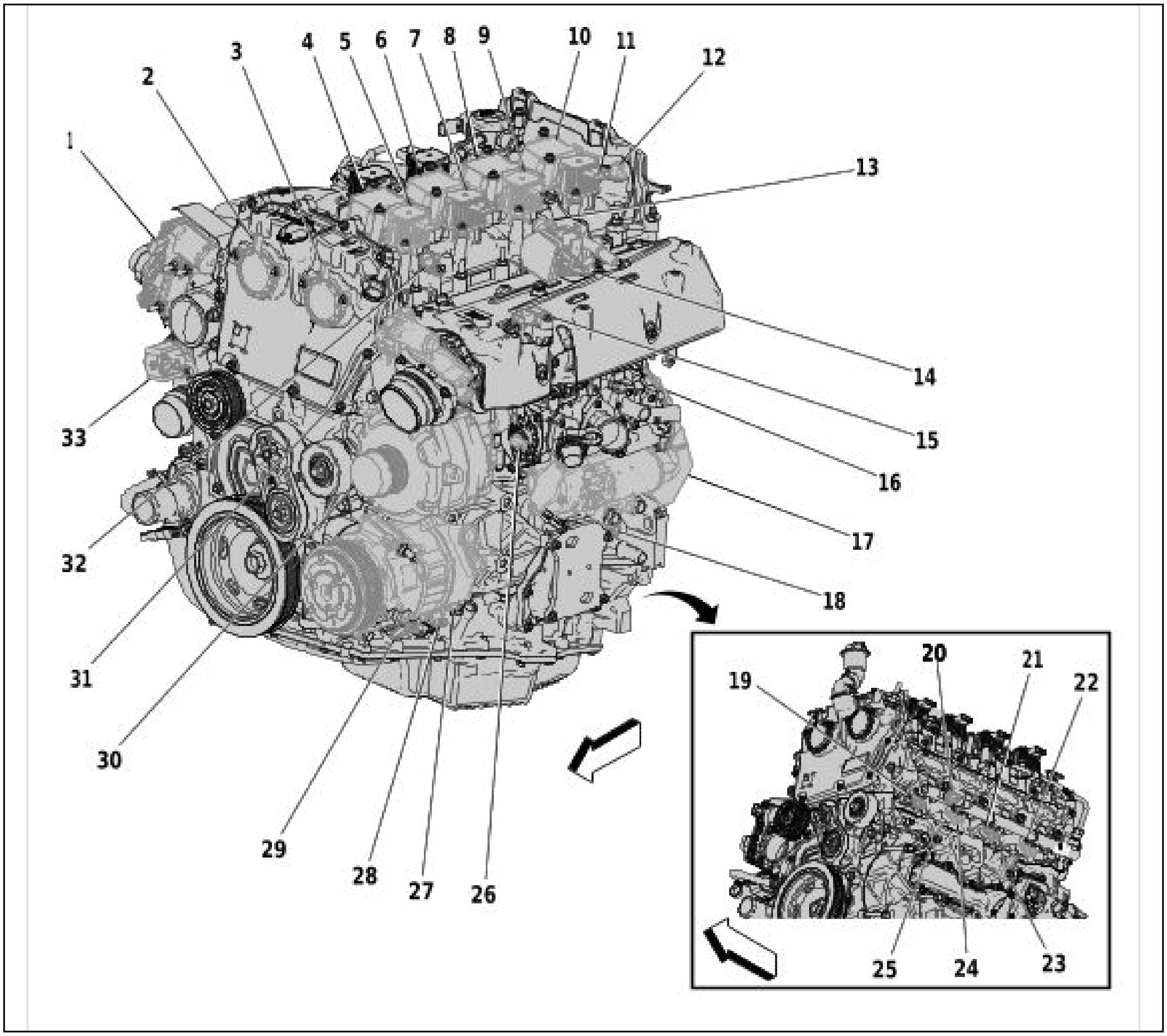
Engine Compartment Components - Bottom



6178214

Items
(1) M96B Active Grille Air Shutter Actuator 2

Engine Components - Left Front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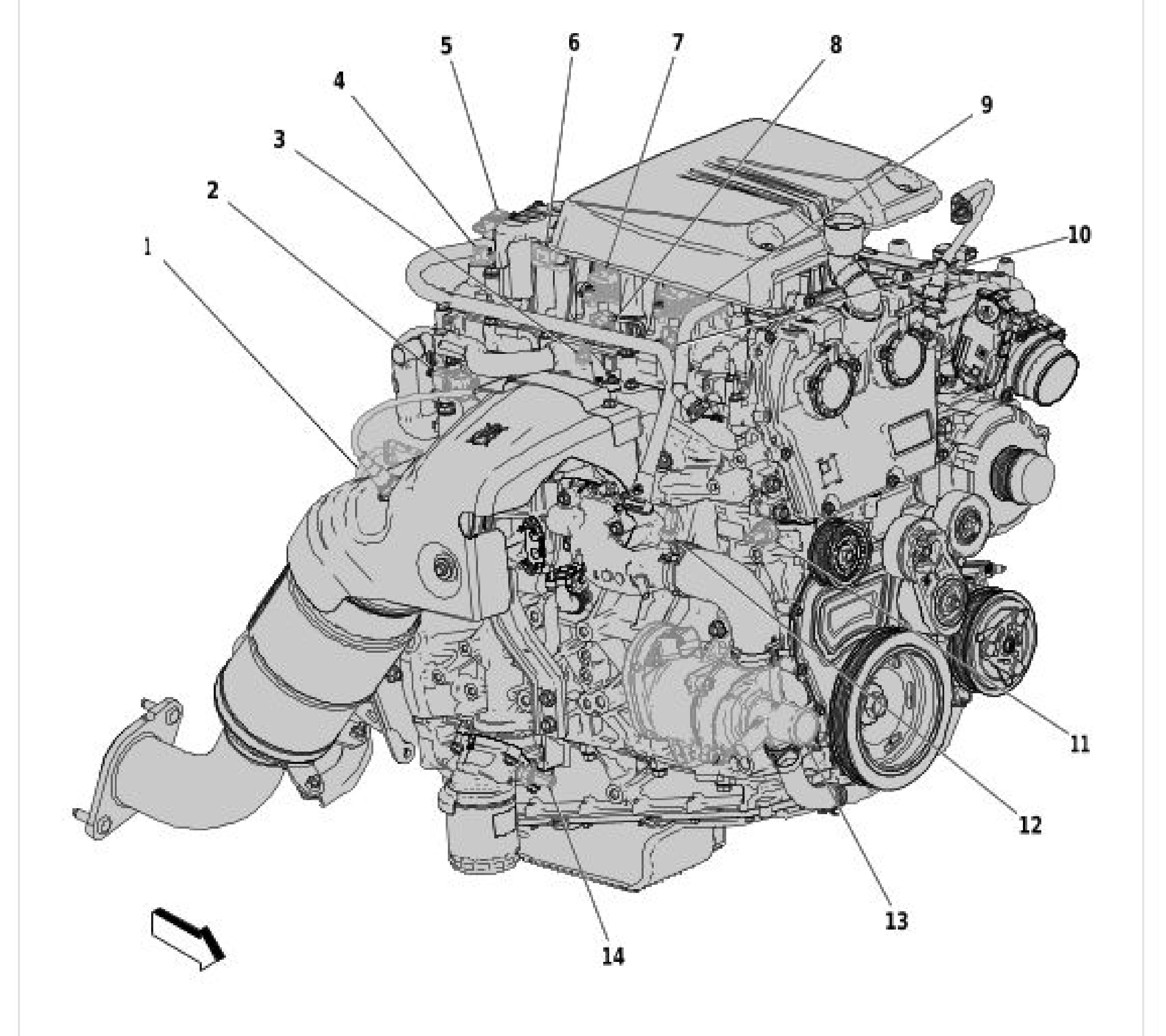
6178215

Items
(1) M128 Turbocharger Wastegate Actuator
(2) Q6E Camshaft Position Actuator Solenoid Valve - Exhaust
(3) Q6F Camshaft Position Actuator Solenoid Valve - Intake
(4) T8A Ignition Coil 1
(5) M129A Intake Camshaft Profile Actuator 1
(6) T8B Ignition Coil 2
(7) M129B Intake Camshaft Profile Actuator 2
(8) T8C Ignition Coil 3
(9) M129C Intake Camshaft Profile Actuator 3
(10) T8D Ignition Coil 4
(11) M129D Intake Camshaft Profile Actuator 4
(12) B23F Camshaft Position Sensor - Intake

Items
(13) B338B Intake Camshaft Profile Sleeve Position Sensor 2
(14) G58 Evaporative Emission Canister Purge Pump
(15) B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
(16) Q74 Engine Coolant Bypass Valve
(17) M64 Starter
(18) B26 Crankshaft Position Sensor
(19) Q17A Fuel Injector 1
(20) B310 Fuel Pressure and Temperature Sensor
(21) Q17C Fuel Injector 3
(22) Q17D Fuel Injector 4
(23) B68B Knock Sensor 2
(24) Q17B Fuel Injector 2
(25) B68A Knock Sensor 1
(26) B34A Engine Coolant Temperature Sensor 1
(27) G1 Air Conditioning Compressor
(28) Q46 Air Conditioning Compressor Solenoid Valve
(29) Q2 Air Conditioning Clutch
(30) G13 Generator
(31) Q38 Throttle Body
(32) B338A Intake Camshaft Profile Sleeve Position Sensor 1
(33) Q40 Turbocharger Bypass Valve Solenoid

Engine Components - Right Front

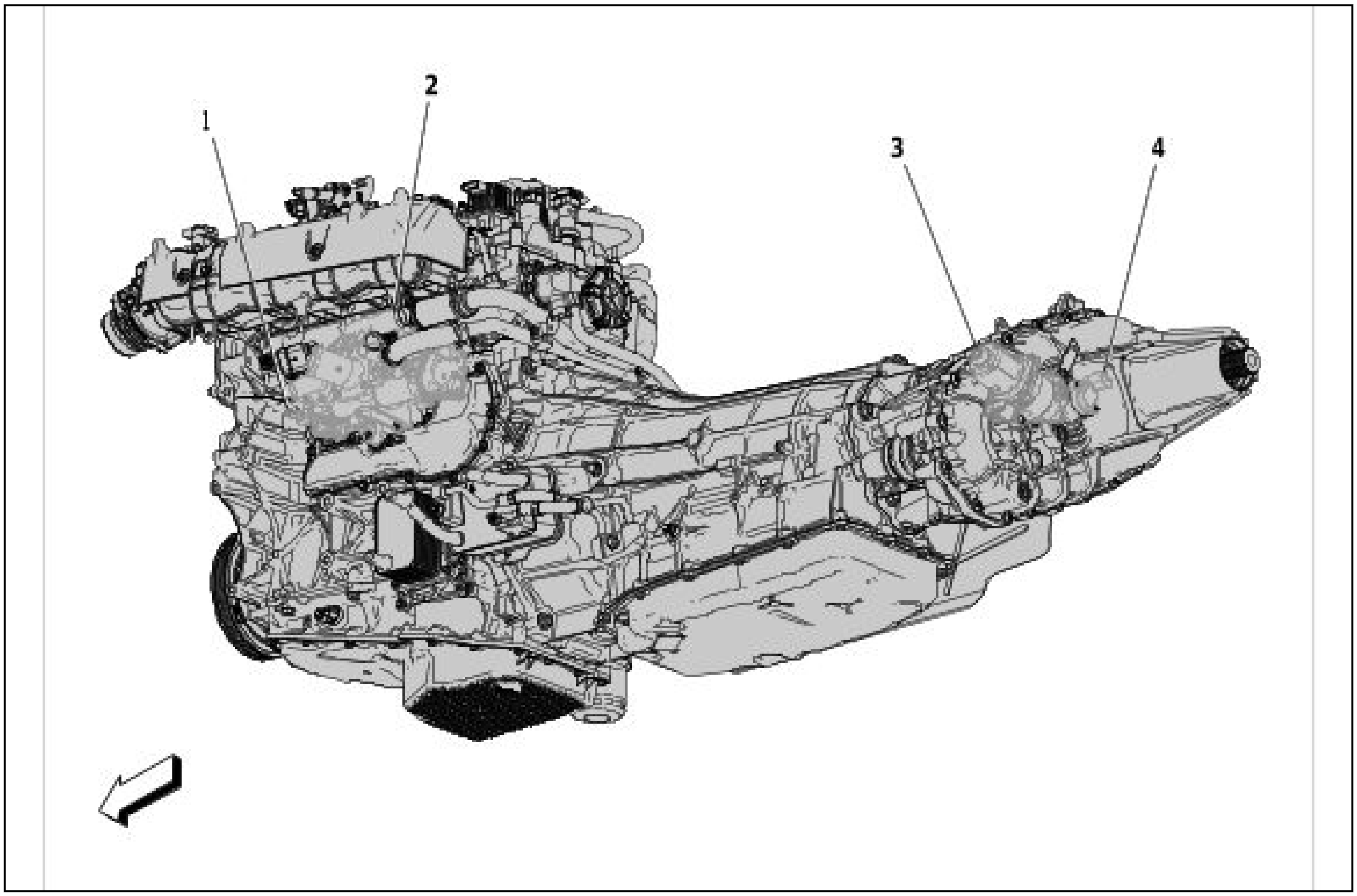


6178216

Items
(1) B52B Heated Oxygen Sensor 2
(2) B52A Heated Oxygen Sensor 1
(3) B34E Engine Coolant Temperature Sensor 5
(4) B23E Camshaft Position Sensor - Exhaust
(5) B321 Crankcase Pressure Sensor
(6) G18 Fuel Pump - High Pressure
(7) M130C Exhaust Camshaft Profile Actuator 3
(8) B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
(9) M130B Exhaust Camshaft Profile Actuator 2
(10) B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
(11) B37B Engine Oil Pressure Sensor

Items
(12) B34B Engine Coolant Temperature Sensor 2
(13) G59 Engine Coolant Pump
(14) B36 Engine Oil Temperature Sensor

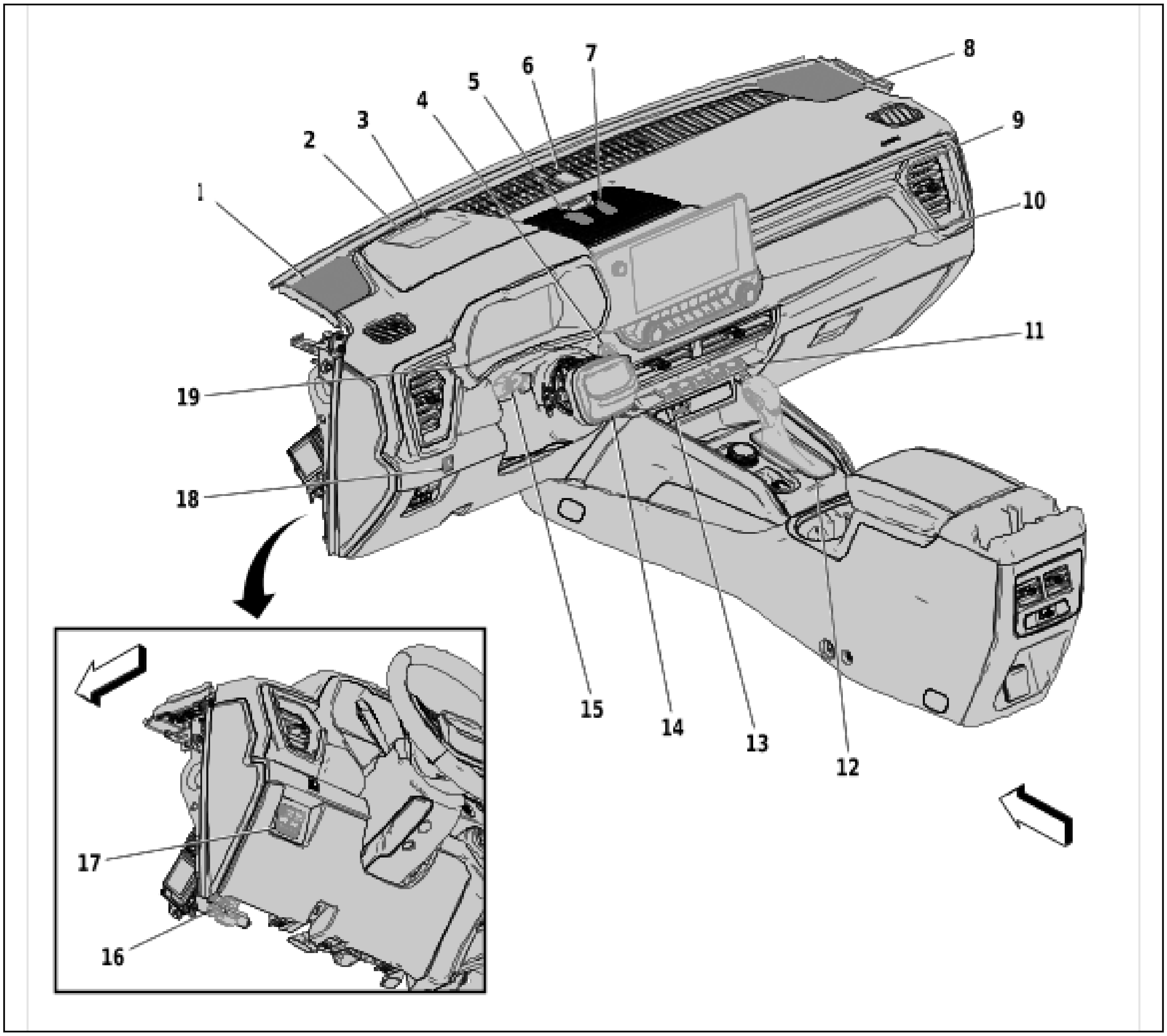
Engine Components - Left Rear



6178217

Items
(1) B34F Engine Coolant Temperature Sensor 6
(2) Q97B Engine Coolant Flow Control Valve - Block
(3) A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)
(4) B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)

Instrument Panel - Front

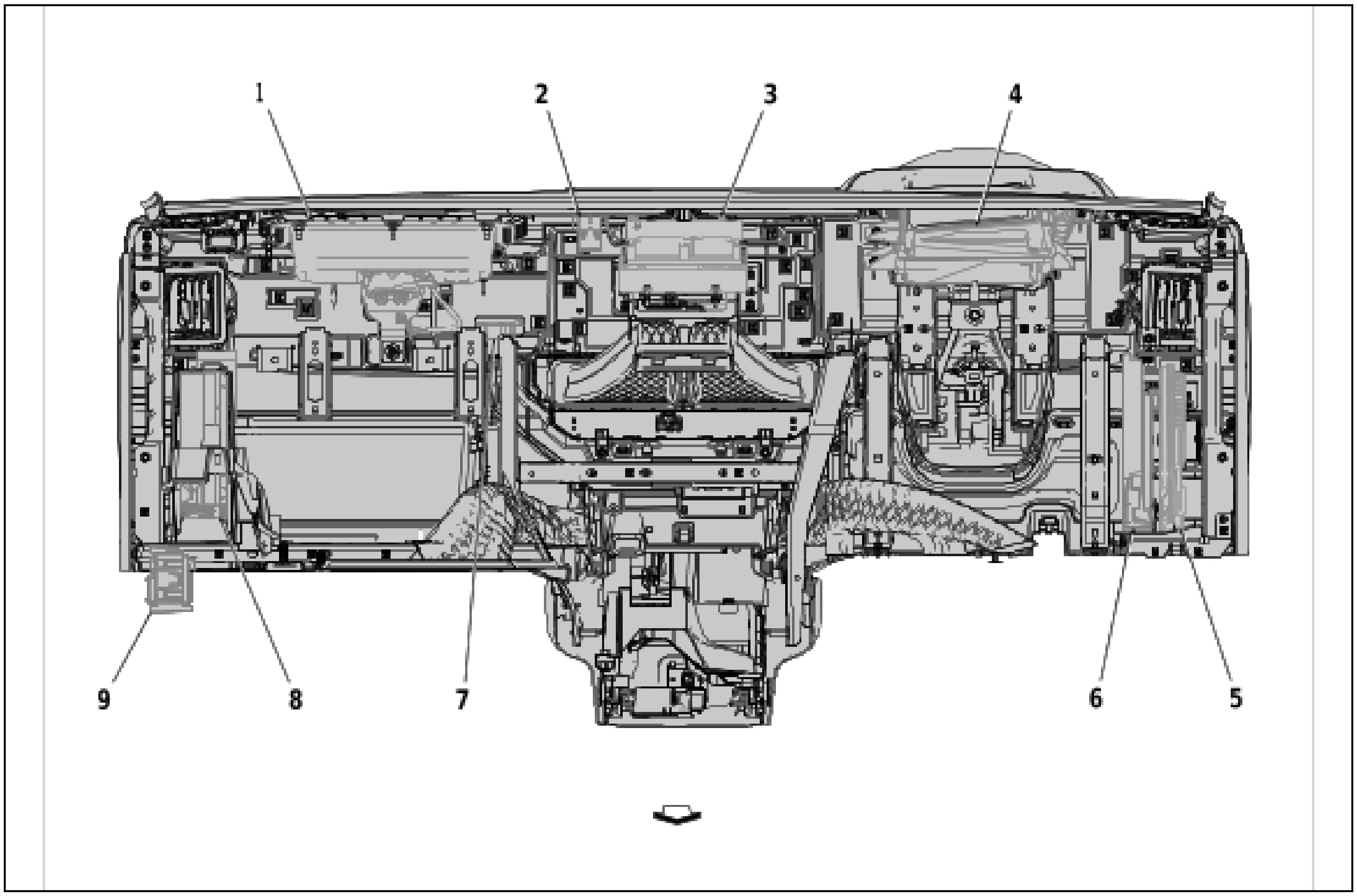


6178218

Items
(1) P19J Radio Front Speaker - Instrument Panel Left (UQ3 / UQA)
(2) P43 Forward Collision Alert Display
(3) P29 Head-Up Display (UV6)
(4) S38 On/Off Vehicle Switch
(5) P50 Regulatory Emergency Call Backup Speaker (UER)
(6) B10D Sun Load and Ambient Light and Security Indicator Sensor
(7) P19B Radio Front Center Speaker (UQA)
(8) P19W Radio Front Speaker - Instrument Panel Right (UQ3 / UQA)
(9) A22 Radio Control
(10) A26 Heater and Air Conditioning User Interface Control - Front

Items
(11) S26 Hazard Warning Switch
(12) S3 Automatic Transmission Control
(13) X92G USB 2 Port Receptacle
(14) X85 Steering Wheel Airbag Coil
(15) S78 Turn Signal Switch
(16) X84 Data Link Connector
(17) S76 Trailer Brake Control Switch
(18) S36 Dimmer Switch
(19) P16 Instrument Panel Cluster Control Module

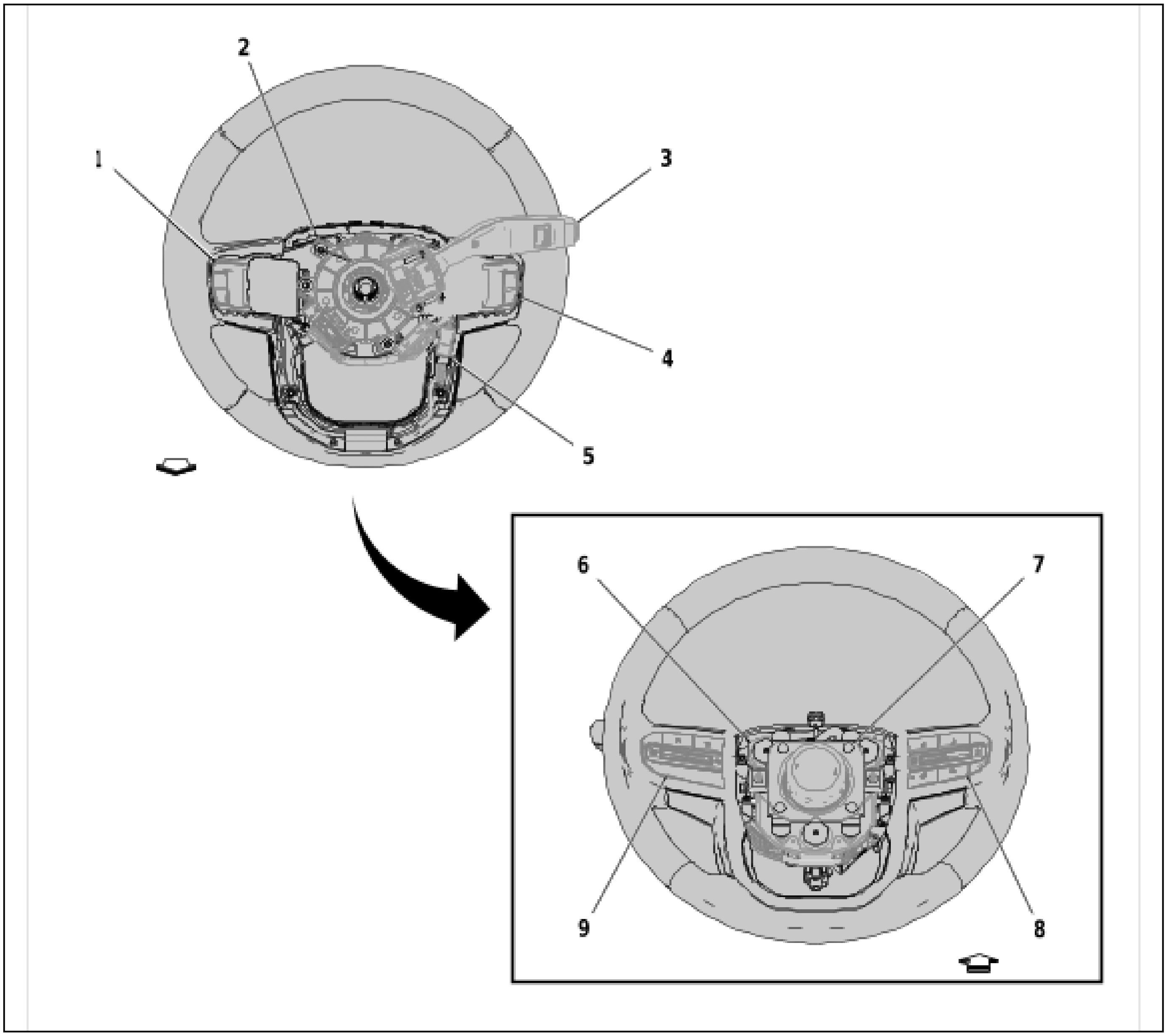
Instrument Panel - Rear



6178219

Items
(1) F101 Instrument Panel Airbag
(2) T4TA Auxiliary Wireless Communication Interface Antenna
(3) K56 Serial Data Gateway Module
(4) P29 Head-Up Display (UV6)
(5) K157 Video Processing Module (UV2 - UVB)
(6) K9 Body Control Module
(7) K182 Parking Assist Control Module
(8) A11 Radio (UXA)
(9) X51A Instrument Panel Wiring Harness Junction Block

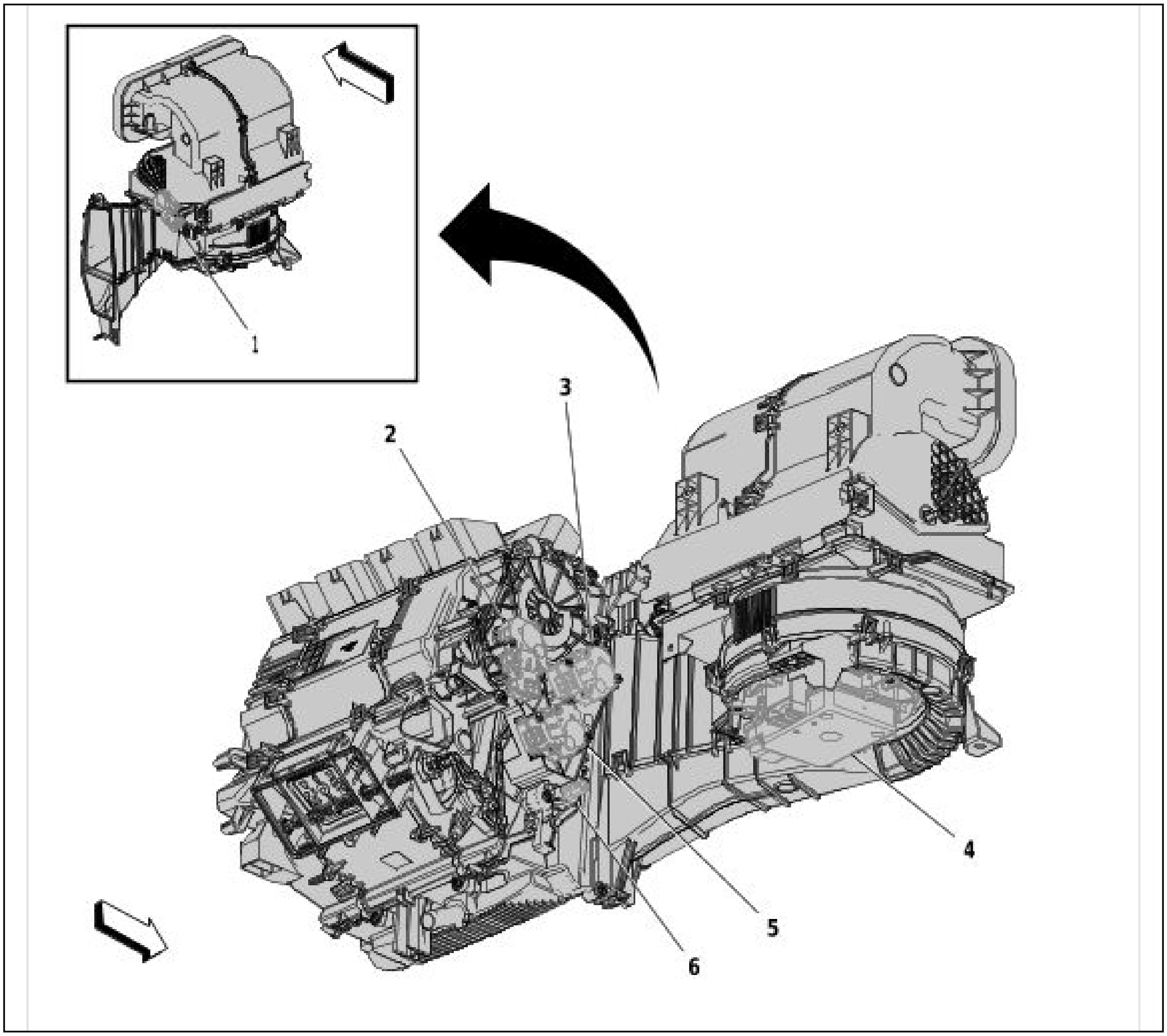
Steering Wheel Components



6178220

Items
(1) S70F Radio Volume Switch - Steering Wheel
(2) X85 Steering Wheel Airbag Coil
(3) S78 Turn Signal Switch
(4) S70E Radio Favorites Switch - Steering Wheel
(5) K32 Heated Steering Wheel Module (KI3)
(6) S33 Steering Wheel Horn Contact
(7) F107 Steering Wheel Airbag
(8) S70R Radio Control Switch - Steering Wheel
(9) S70L Cruise Control Switch

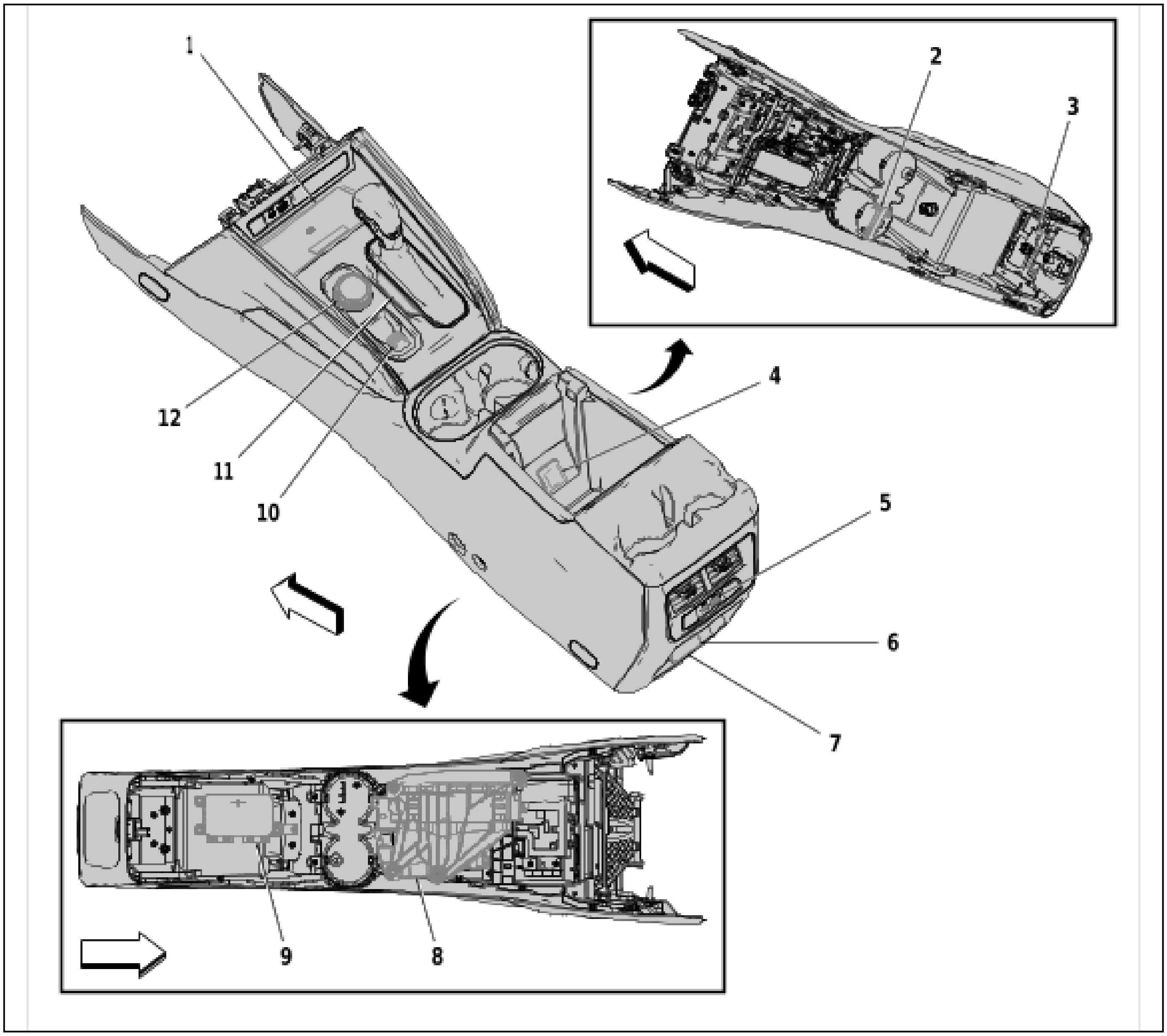
HVAC Components



6178222

Items
(1) M4P Programmable Air Inlet Valve Actuator
(2) M37P Programmable Mode Valve Actuator
(3) M6PL Programmable Temperature Valve Actuator - Left
(4) M8 Blower Motor
(5) M6PR Programmable Temperature Valve Actuator - Right
(6) B39 Air Conditioning Evaporator Air Temperature Sensor

Floor Console Components

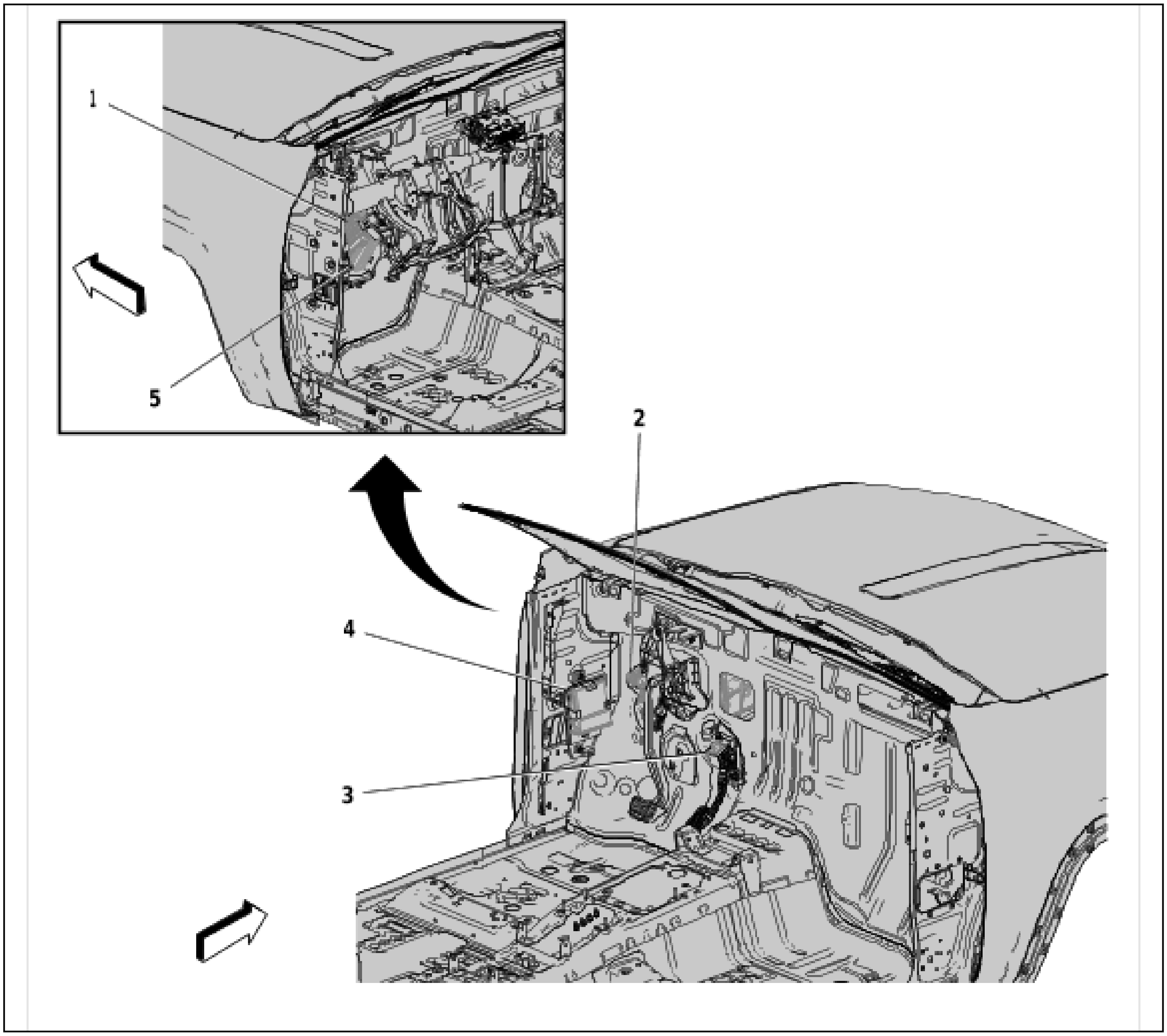


6178223

Items
(1) T22 Wireless Accessory Charging Module (K4C)
(2) T10UA Low Frequency Console Antenna
(3) T10KA Low Frequency Console Number 2 Antenna
(4) X80L Front Floor Console Accessory Power Rear Receptacle (KCA)
(5) X92C Single Charge Only 2nd Row Receptacle - Floor Console Rear
(6) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI6)
(7) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI7)
(8) S3 Automatic Transmission Control
(9) K36 Restraints Control Module
(10) S91 Parking Brake Control Switch

Items
(11) P2 Automatic Transmission Control Indicator
(12) S126 Ride Control Switch (NP0 / NQH)

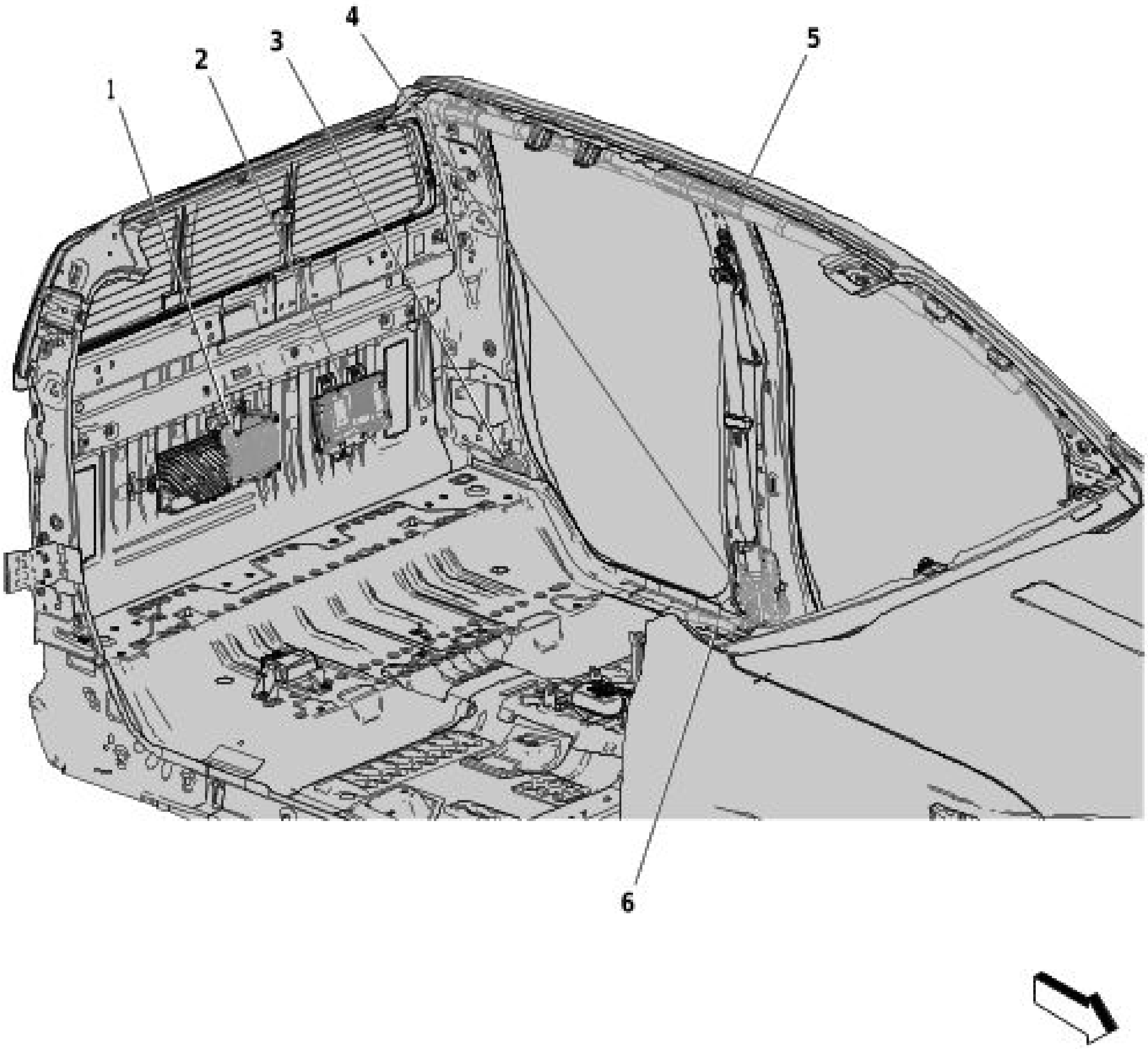
Passenger Compartment - Left Front



6178224

Items
(1) K157 Video Processing Module (UV2 - UVB)
(2) B22 Brake Pedal Position Sensor
(3) B107 Accelerator Pedal Position Sensor
(4) K219 Lighting Control Module
(5) K9 Body Control Module

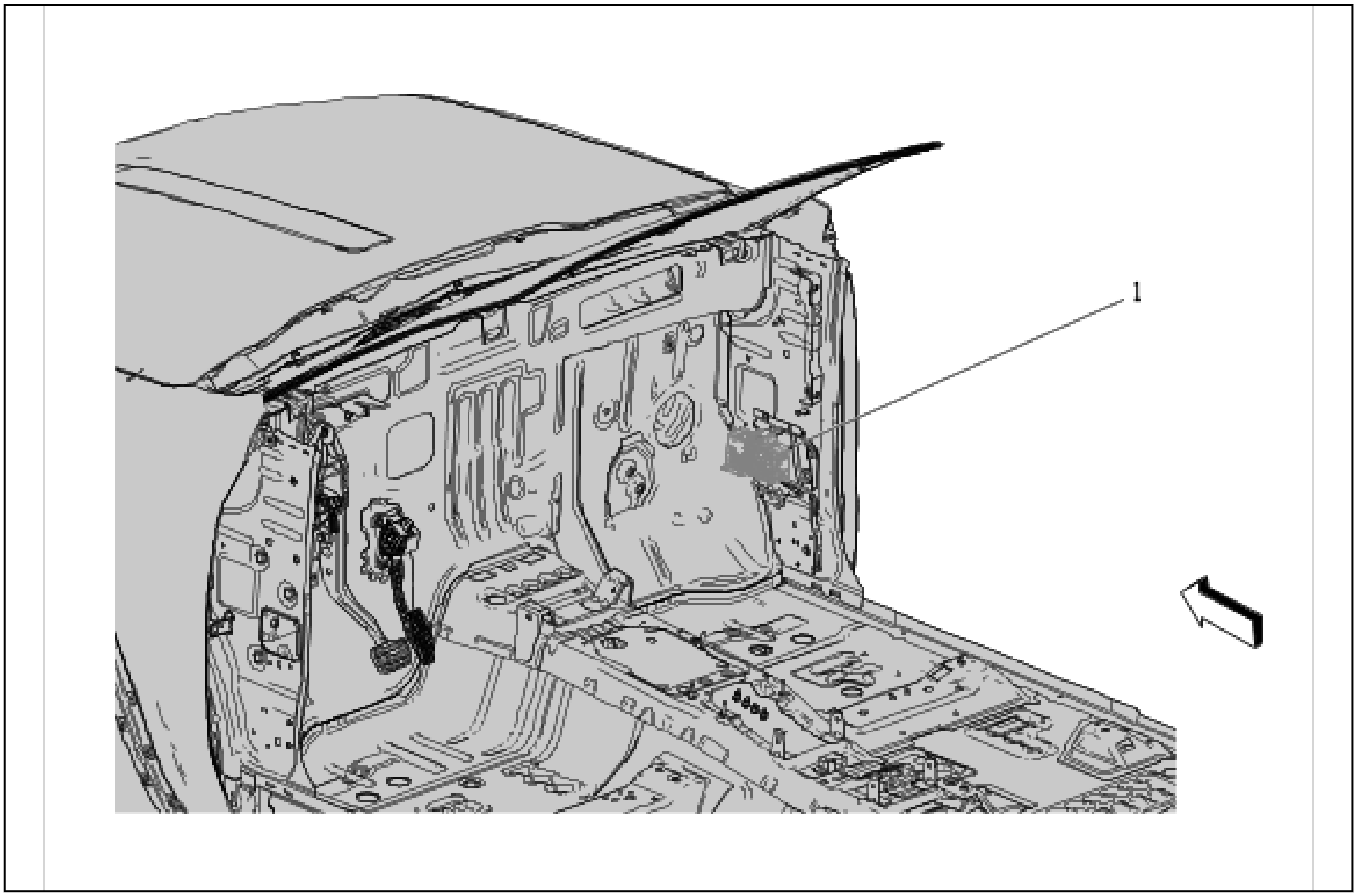
Passenger Compartment - Left Rear



6178225

Items
(1) T1 DC/AC Converter Control Module (KC9 / KCA)
(2) K73 Telematic Control Module
(3) B63LRG Airbag Side Impact Rear Sensor - Left
(4) F112D Front Seat Belt Retractor - Driver
(5) F105L Front and Rear Row Roof Rail Airbag - Left
(6) F113D Front Seat Belt Anchor Plate Tensioner - Driver

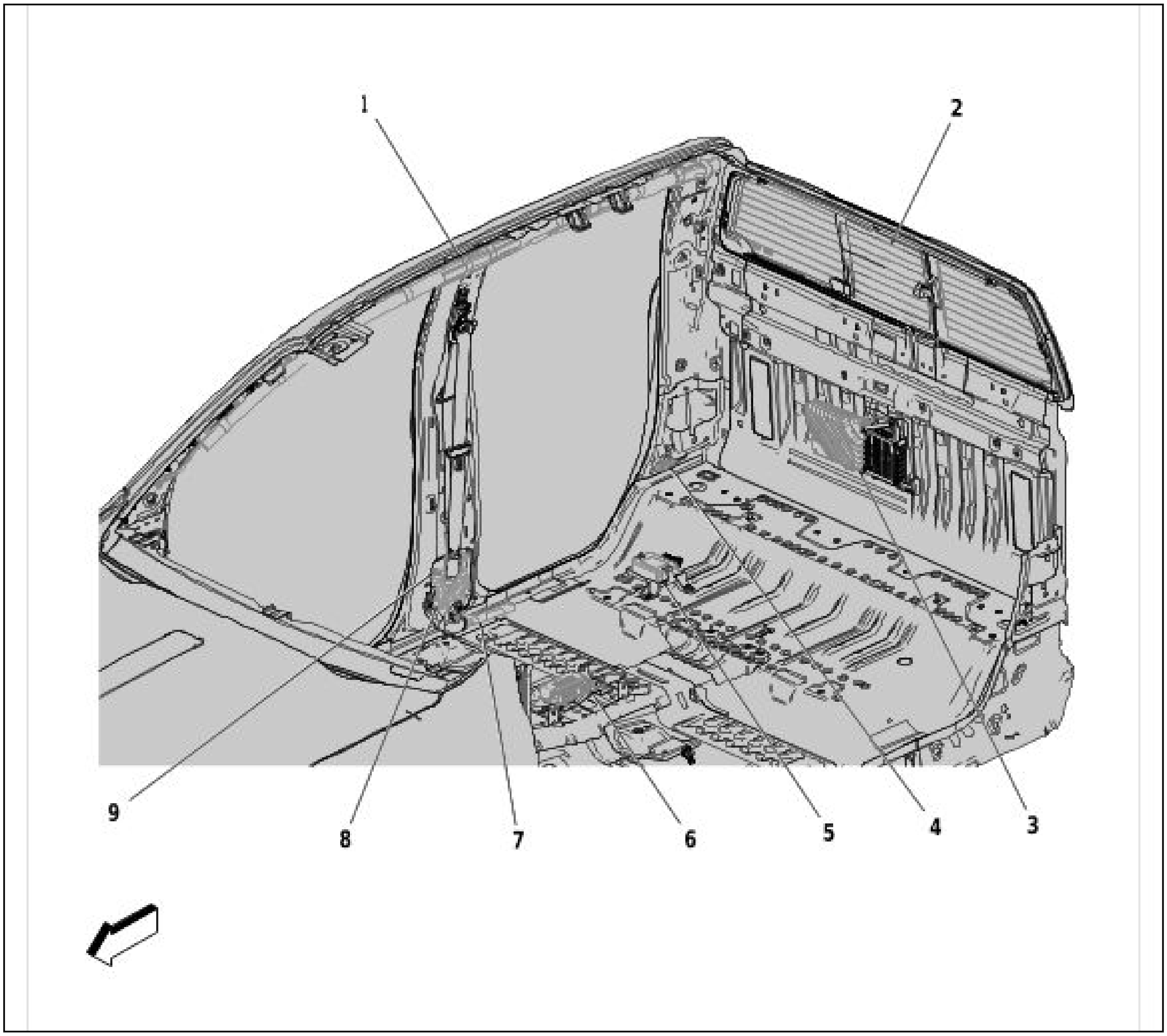
Passenger Compartment - Right Front



6178226

Items
(1) X51A Instrument Panel Wiring Harness Junction Block

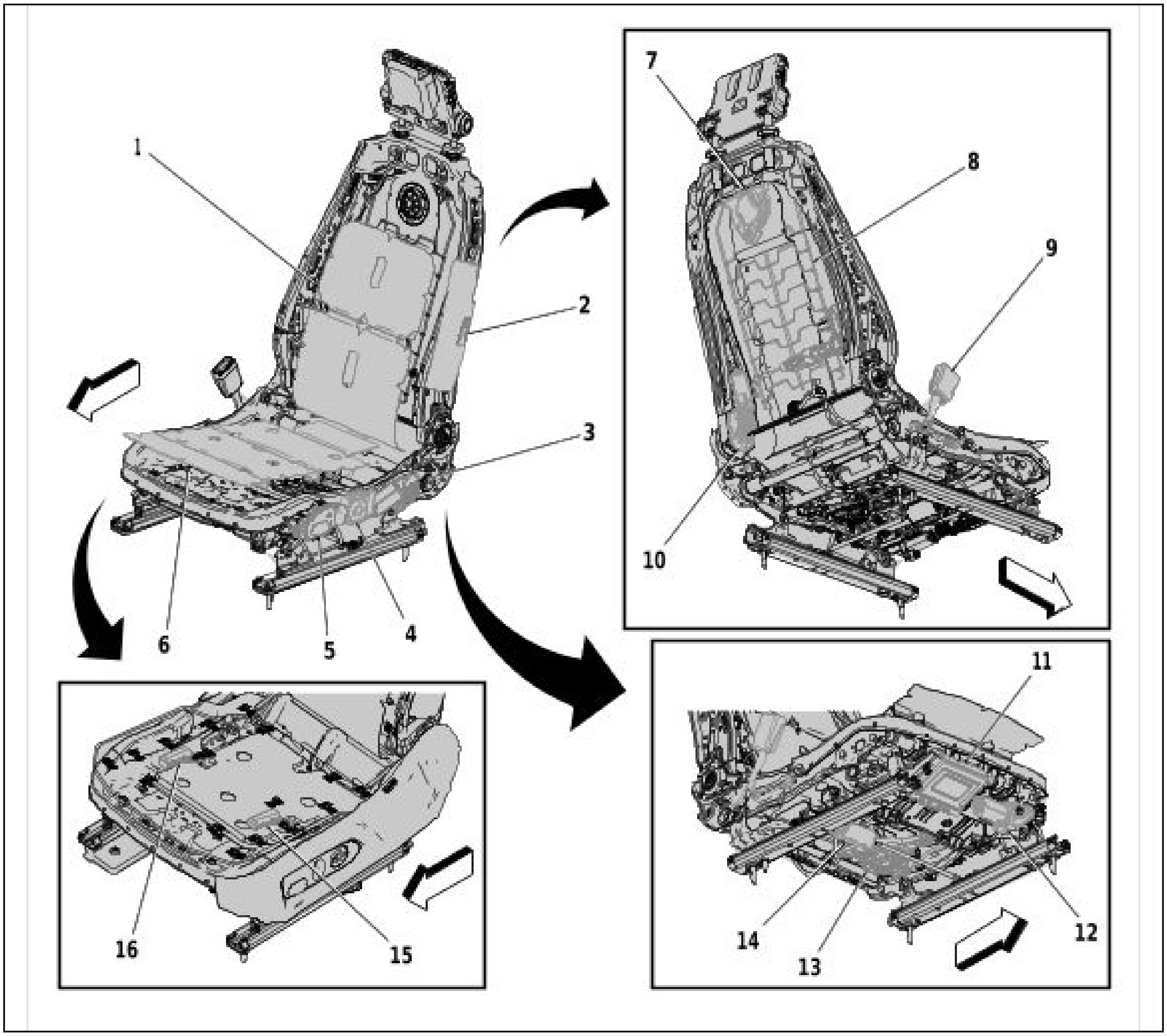
Passenger Compartment - Right Rear



6178227

Items
(1) F105R Front and Rear Row Roof Rail Airbag - Right
(2) E18 Rear Window Defogger Grid
(3) T3 Audio Amplifier
(4) B63RRG Airbag Side Impact Rear Sensor - Right
(5) T19 Multifunction Power Supply Converter
(6) K36 Restraints Control Module
(7) F113P Front Seat Belt Anchor Plate Tensioner - Passenger
(8) F112P Front Seat Belt Retractor - Passenger
(9) B61P Seat Belt Tension Sensor - Passenger

Driver Seat Components

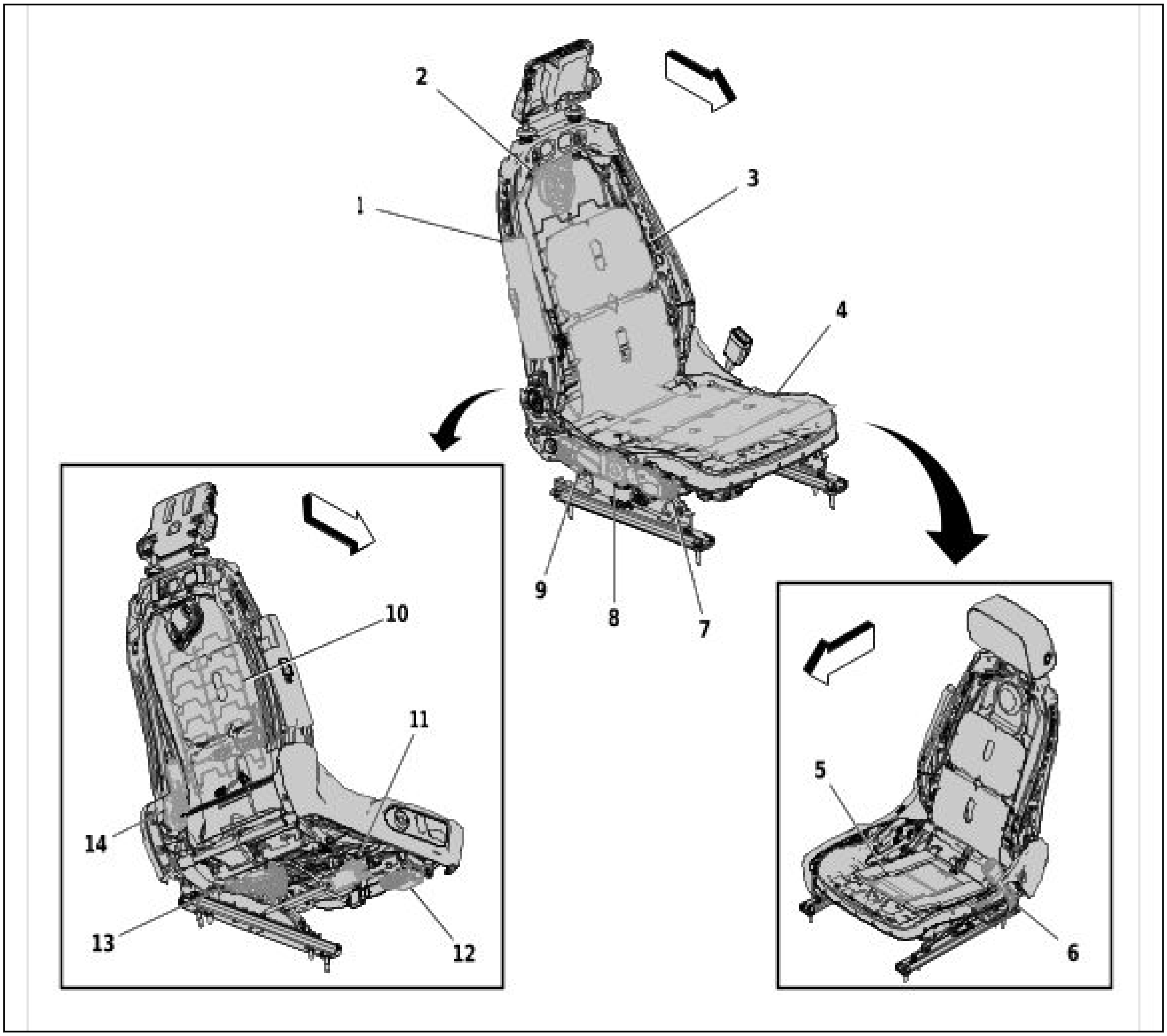


6178228

Items
(1) E14A Front Seat Back Heater - Driver
(2) F106D Front Seat Outboard Seat Back Airbag - Driver
(3) M55D Front Seat Vertical Adjuster Actuator - Driver
(4) S65D Front Seat Lumbar Switch - Driver (AL9)
(5) S64D Front Seat Adjuster Switch - Driver (A2X / A45)
(6) E14B Front Seat Cushion Heater - Driver
(7) M73A Front Seat Back Ventilation Blower - Driver
(8) M53D Front Seat Back Lumbar Motor - Driver
(9) B88D Seat Belt Switch - Driver
(10) M56D Front Seat Recliner Actuator - Driver
(11) K40D Driver Seat Adjuster Memory Module (A45)
(12) M50D Front Seat Tilt Adjuster Actuator - Driver

Items
(13) M73D Front Seat Cushion Ventilation Blower - Driver
(14) M51D Front Seat Adjuster Actuator - Driver
(15) P45L Front Seat Lane Departure Warning Actuator - Left (HS1)
(16) P45R Front Seat Lane Departure Warning Actuator - Right (HS1)

Passenger Seat Components

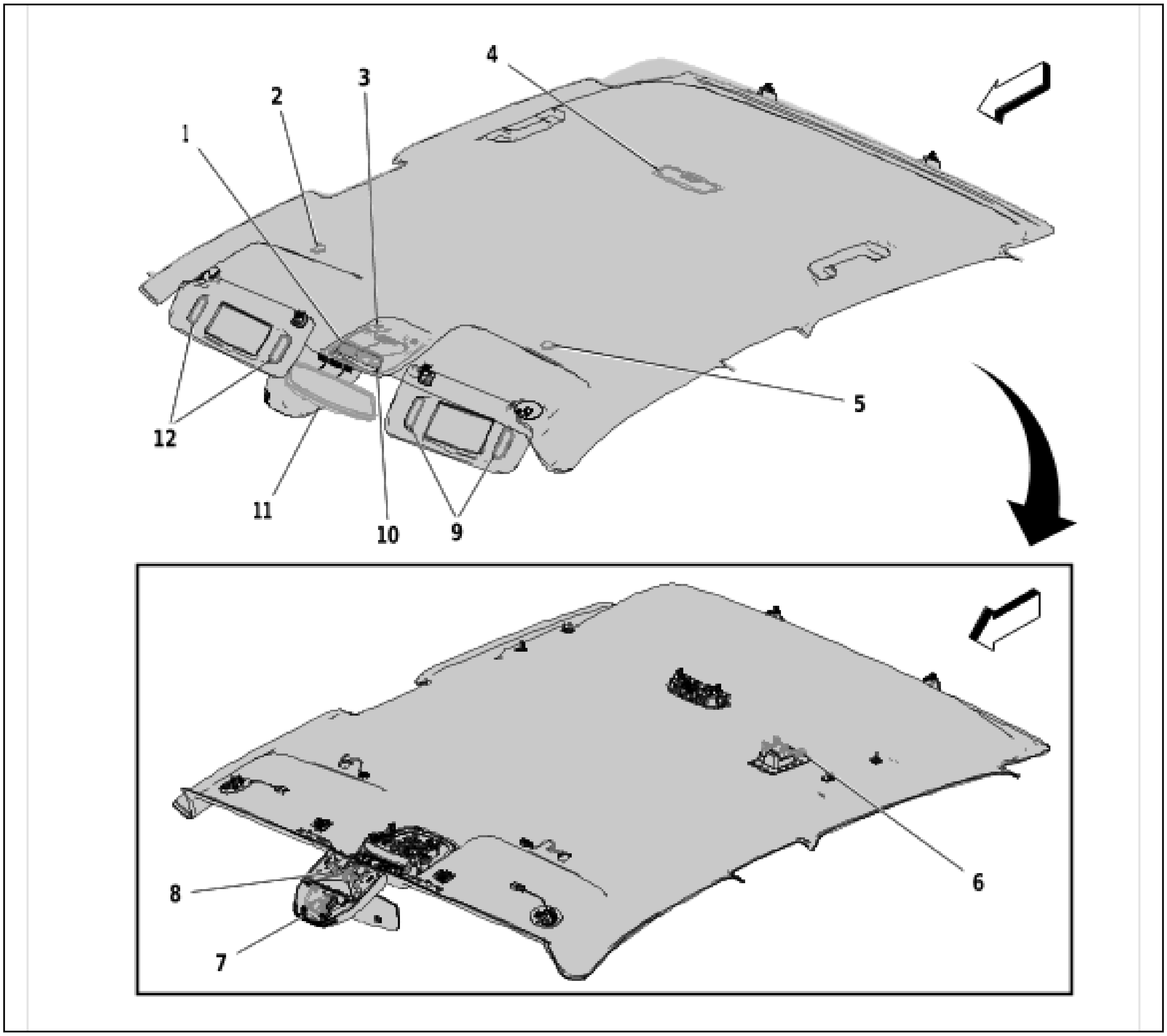


6178229

Items
(1) F106P Front Seat Outboard Seat Back Airbag - Passenger
(2) M73B Front Seat Back Ventilation Blower - Passenger (KU9)
(3) E14C Front Seat Back Heater - Passenger (KA1)
(4) E14D Front Seat Cushion Heater - Passenger (KA1)

Items
(5) K85P Restraints Occupant Classification System Module - Passenger
(6) B88P Seat Belt Switch - Passenger
(7) S64P Front Seat Adjuster Switch - Passenger
(8) S65P Front Seat Lumbar Switch - Passenger
(9) M55P Front Seat Vertical Adjuster Actuator - Passenger
(10) M53P Front Seat Back Lumbar Motor - Passenger
(11) M51P Front Seat Adjuster Actuator - Passenger
(12) K29FV Front Seat Heater Vent Control Module (KA1)
(13) M73P Front Seat Cushion Ventilation Blower - Passenger (KU9)
(14) M56P Front Seat Recliner Actuator - Passenger

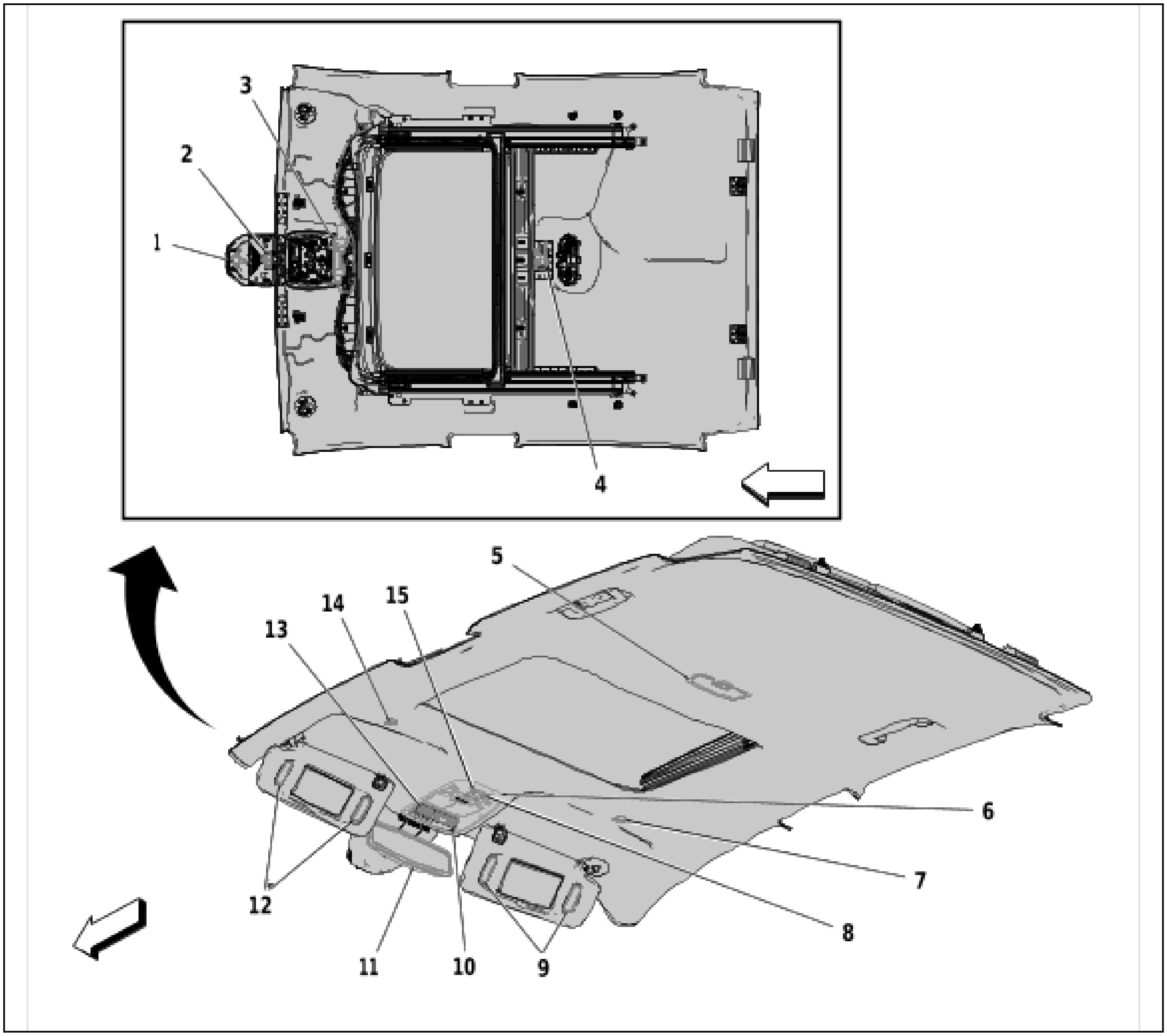
Headliner Components (- CAC)



6178230

Items
(1) S51 Communication Center Call Switch
(2) B24 Mobile Telephone Microphone
(3) A103 Roof Console (DD8)
(4) E97 Rear Seat Position Center Courtesy Lamp
(5) B355 Communication Interface Module Microphone
(6) K77 Remote Function Actuator Module
(7) B160 Inside Air Moisture and Windshield Temperature Sensor
(8) B174W Front View Camera - Windshield
(9) E31R Sunshade Mirror Lamp - Right
(10) P14 Instrument Panel Airbag Arming Status Display
(11) A10 Inside Rearview Mirror
(12) E31L Sunshade Mirror Lamp - Left

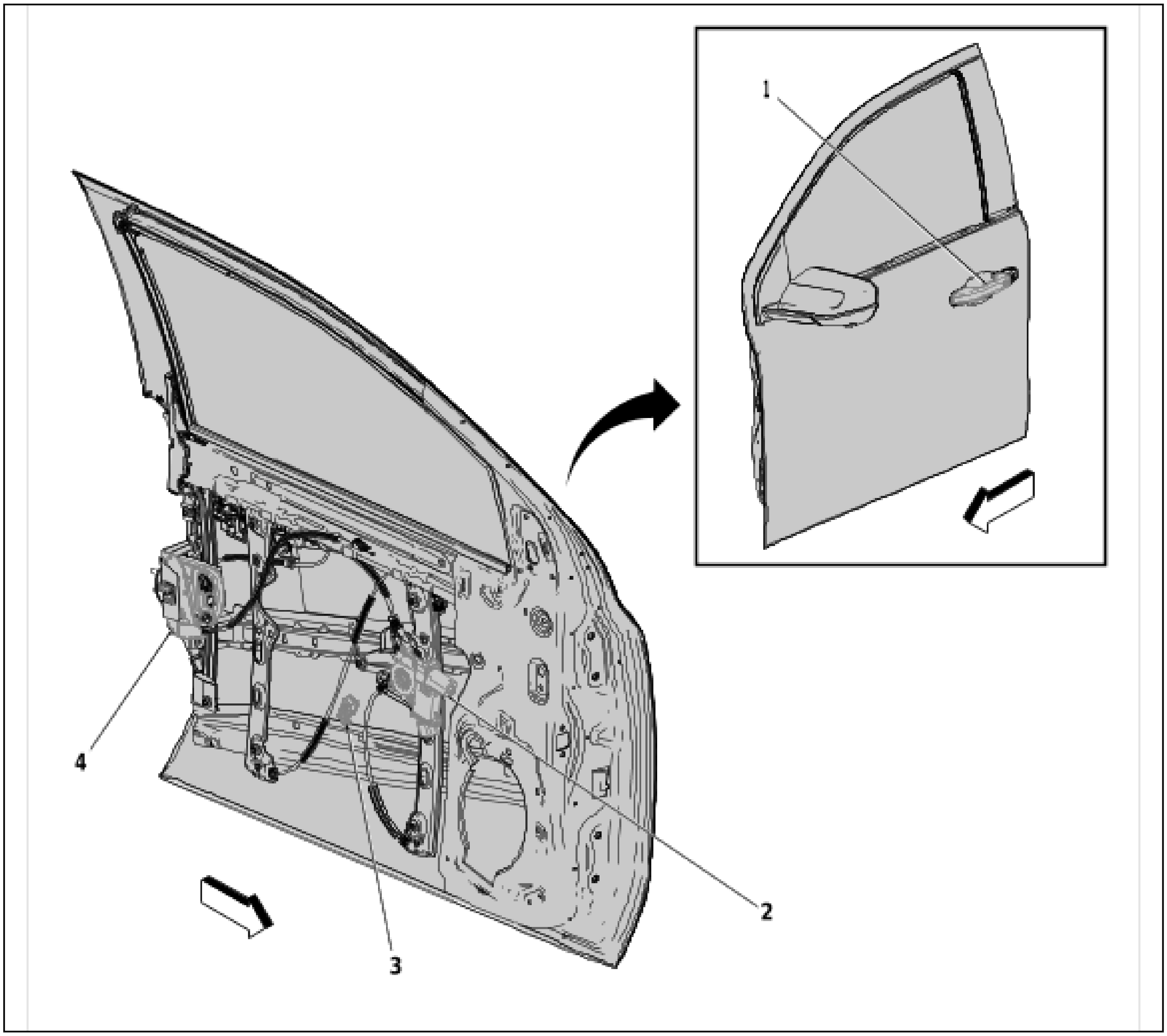
Headliner Components (CAC)



6178231

Items
(1) B160 Inside Air Moisture and Windshield Temperature Sensor
(2) B174W Front View Camera - Windshield
(3) K61 Sunroof Control Module
(4) K77 Remote Function Actuator Module
(5) E97 Rear Seat Position Center Courtesy Lamp
(6) A103 Roof Console (DD8)
(7) B355 Communication Interface Module Microphone
(8) S88 Sunroof Tilt Position Switch (CAC)
(9) E31R Sunshade Mirror Lamp - Right
(10) P14 Instrument Panel Airbag Arming Status Display
(11) A10 Inside Rearview Mirror
(12) E31L Sunshade Mirror Lamp - Left
(13) S51 Communication Center Call Switch
(14) B24 Mobile Telephone Microphone
(15) S72 Sunroof Switch (CAC)

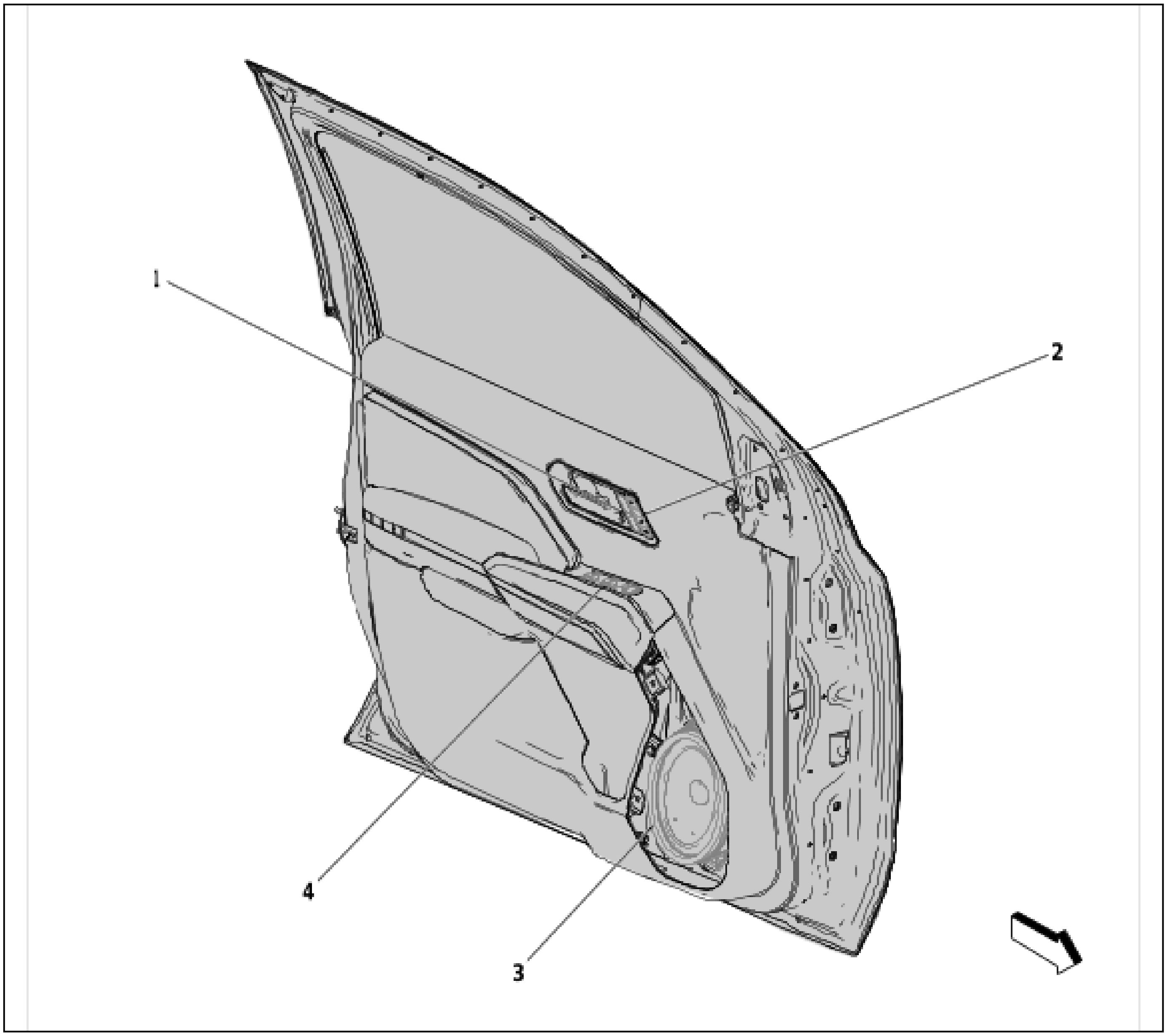
Driver Door Components



6178232

Items
(1) B27LF Front Side Door Outside Handle Switch - Left
(2) M74D Front Side Door Window Regulator Motor - Driver (UQ3 / UQA)
(3) B63LF Airbag Side Impact Sensor - Left Front Door
(4) A23SL Front Side Door Latch Striker - Left

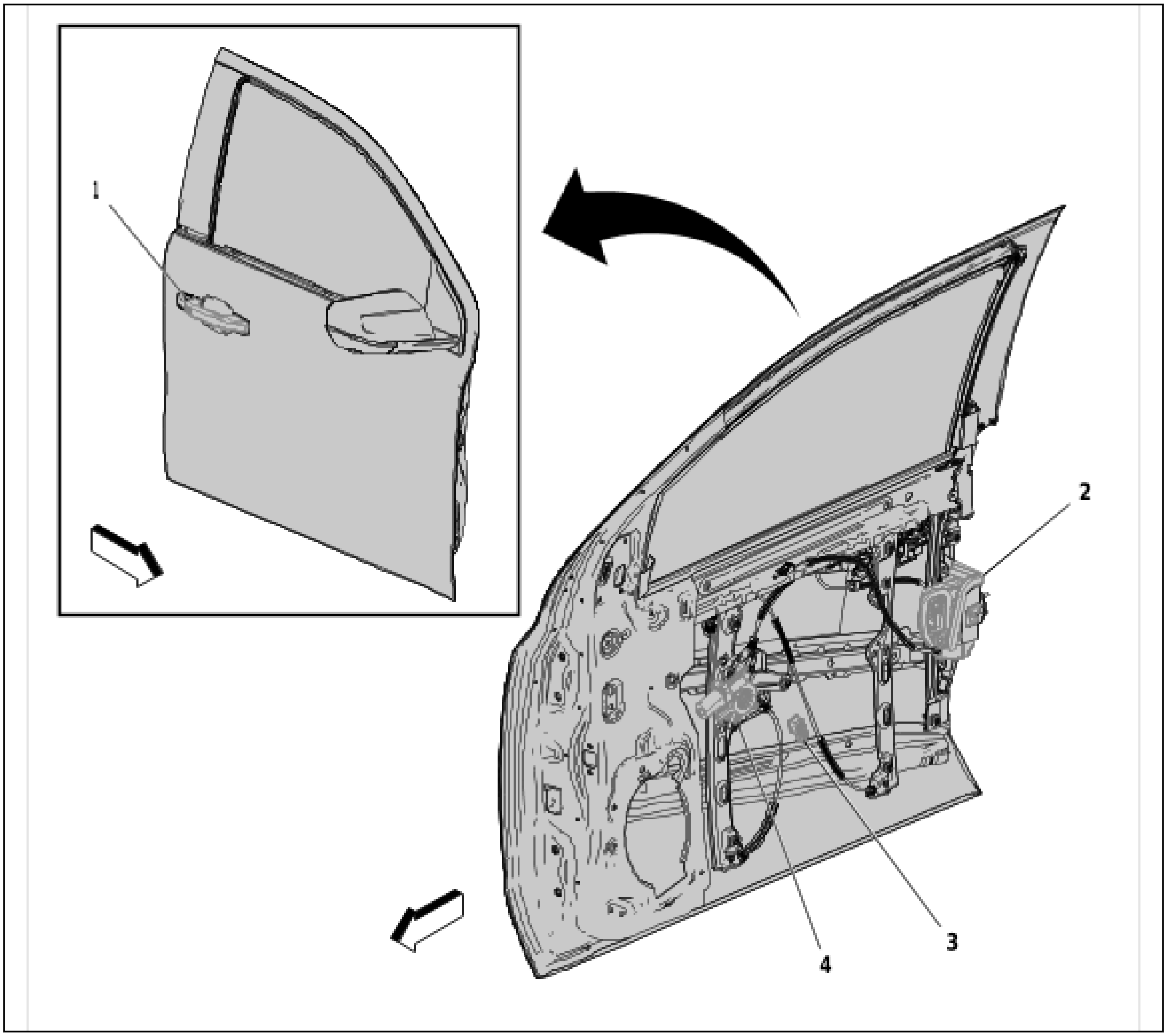
Driver Door Trim Components



6178233

Items
(1) S13D Door Lock Switch - Driver
(2) S47D Front Seat Adjuster Memory Switch - Driver (A45)
(3) P19AG Radio Front Side Door Speaker - Left (UQA / UQ3)
(4) S79D Front Side Door Window Control Switch - Driver

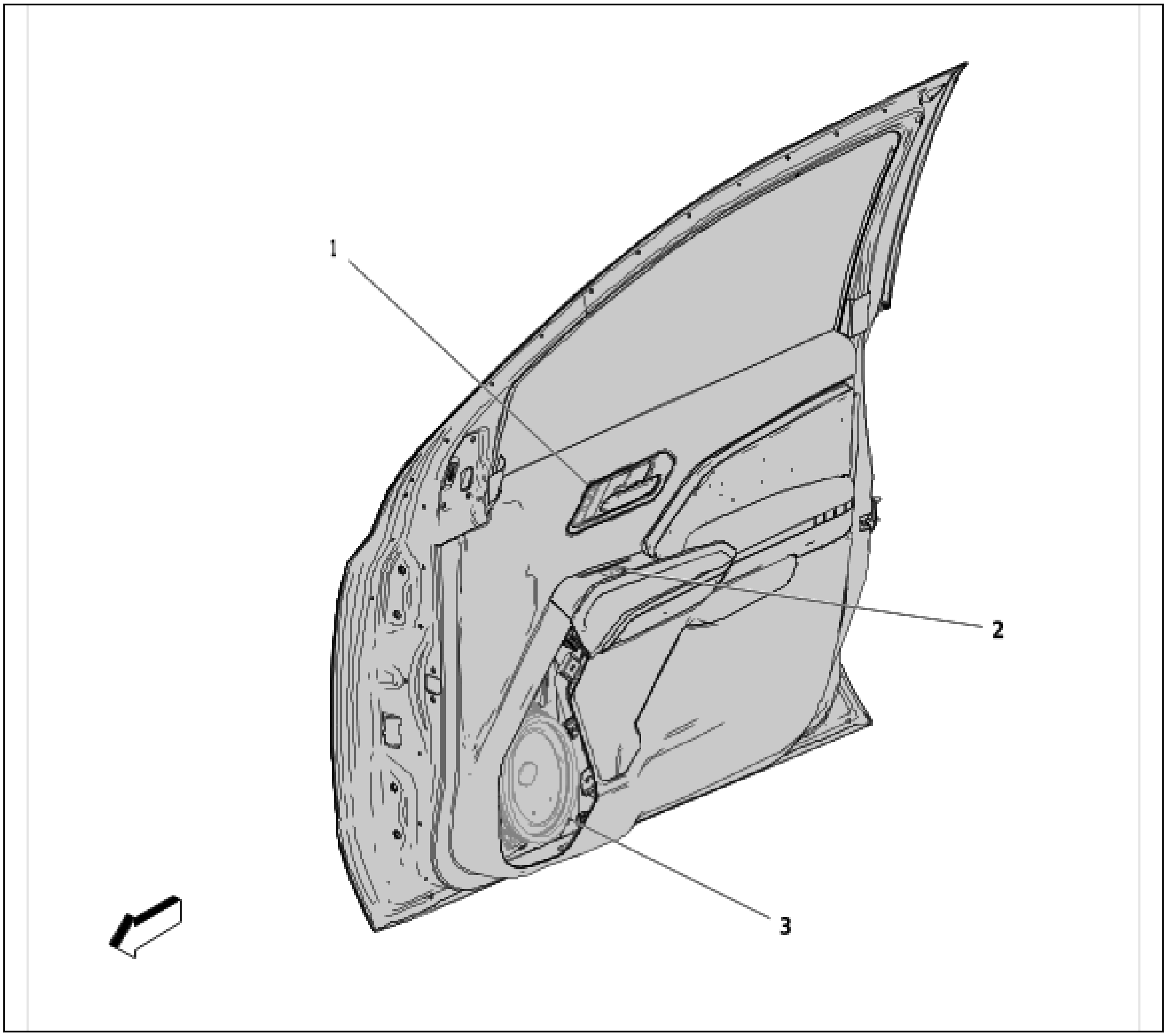
Passenger Door Components



6178234

Items
(1) B27RF Front Side Door Outside Handle Switch - Right
(2) A23P Front Side Door Latch - Passenger
(3) B63RF Airbag Side Impact Sensor - Right Front Door
(4) M74P Front Side Door Window Regulator Motor - Passenger

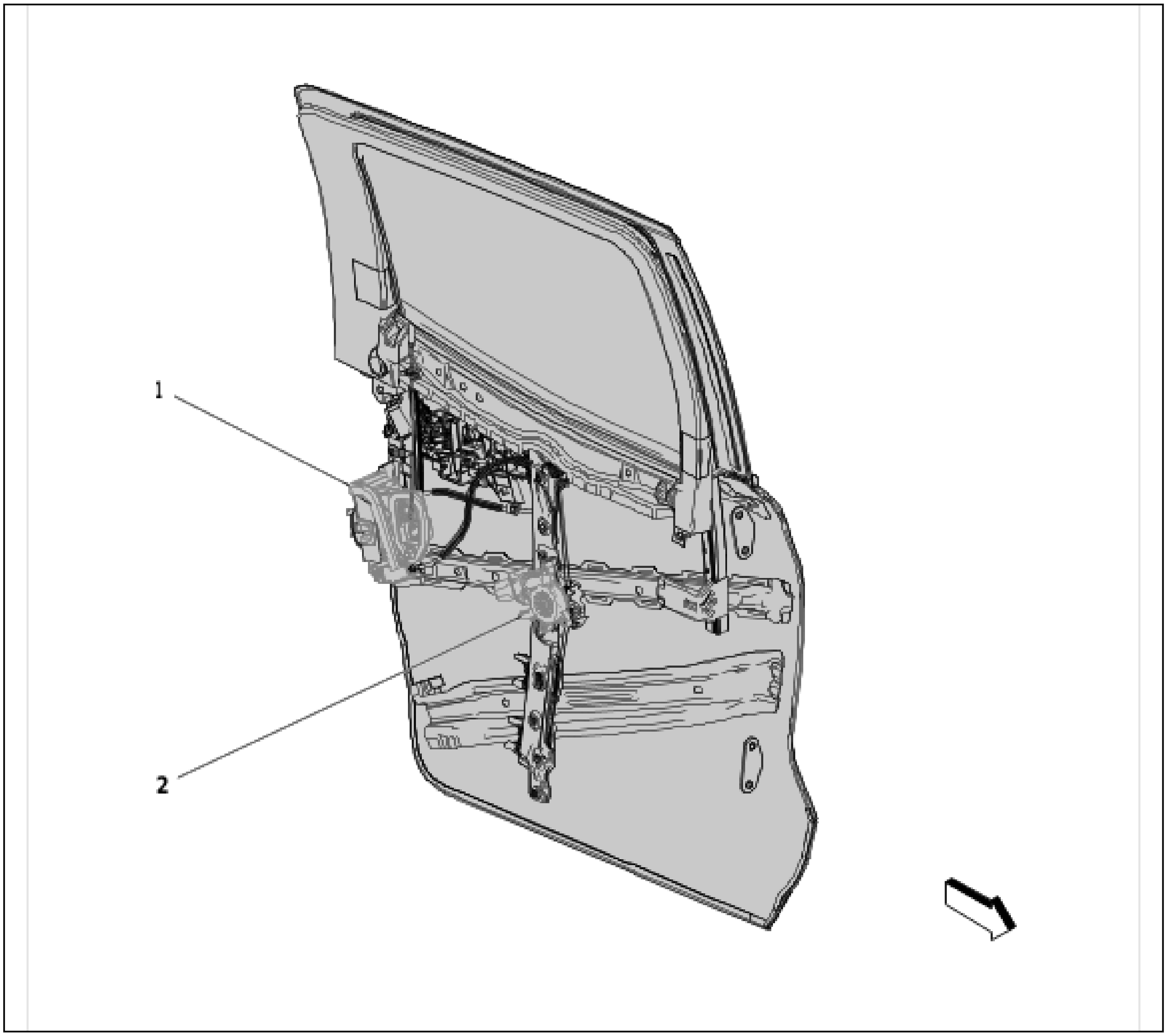
Passenger Door Trim Components



6178235

Items
(1) S13P Door Lock Switch - Passenger
(2) S79P Front Side Door Window Switch - Passenger
(3) P19AH Radio Front Side Door Speaker - Right (UQA / UQ3)

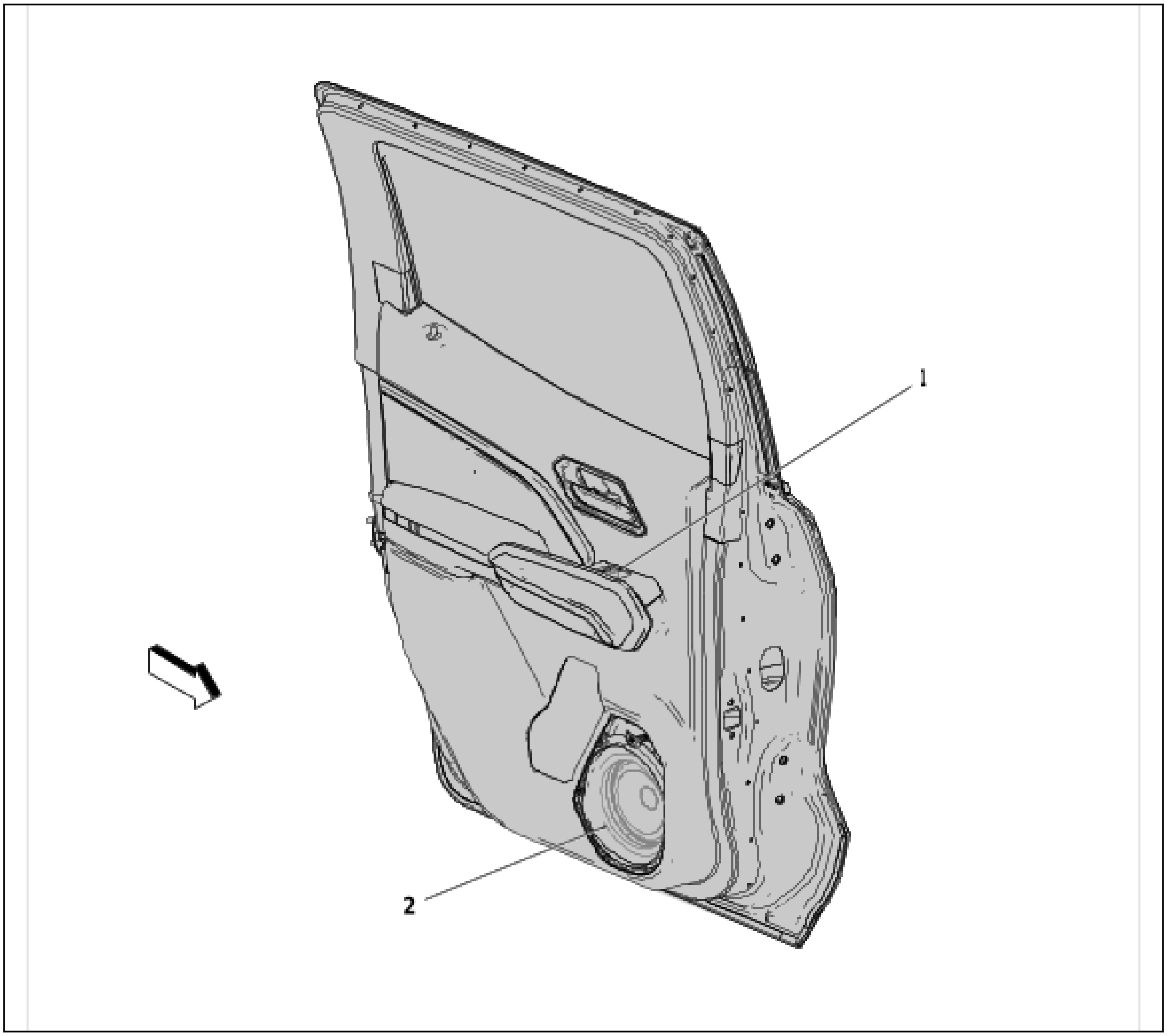
Left Rear Door Components



6178236

Items
(1) A23LR Rear Side Door Latch - Left
(2) M74LR Rear Side Door Window Regulator Motor - Left

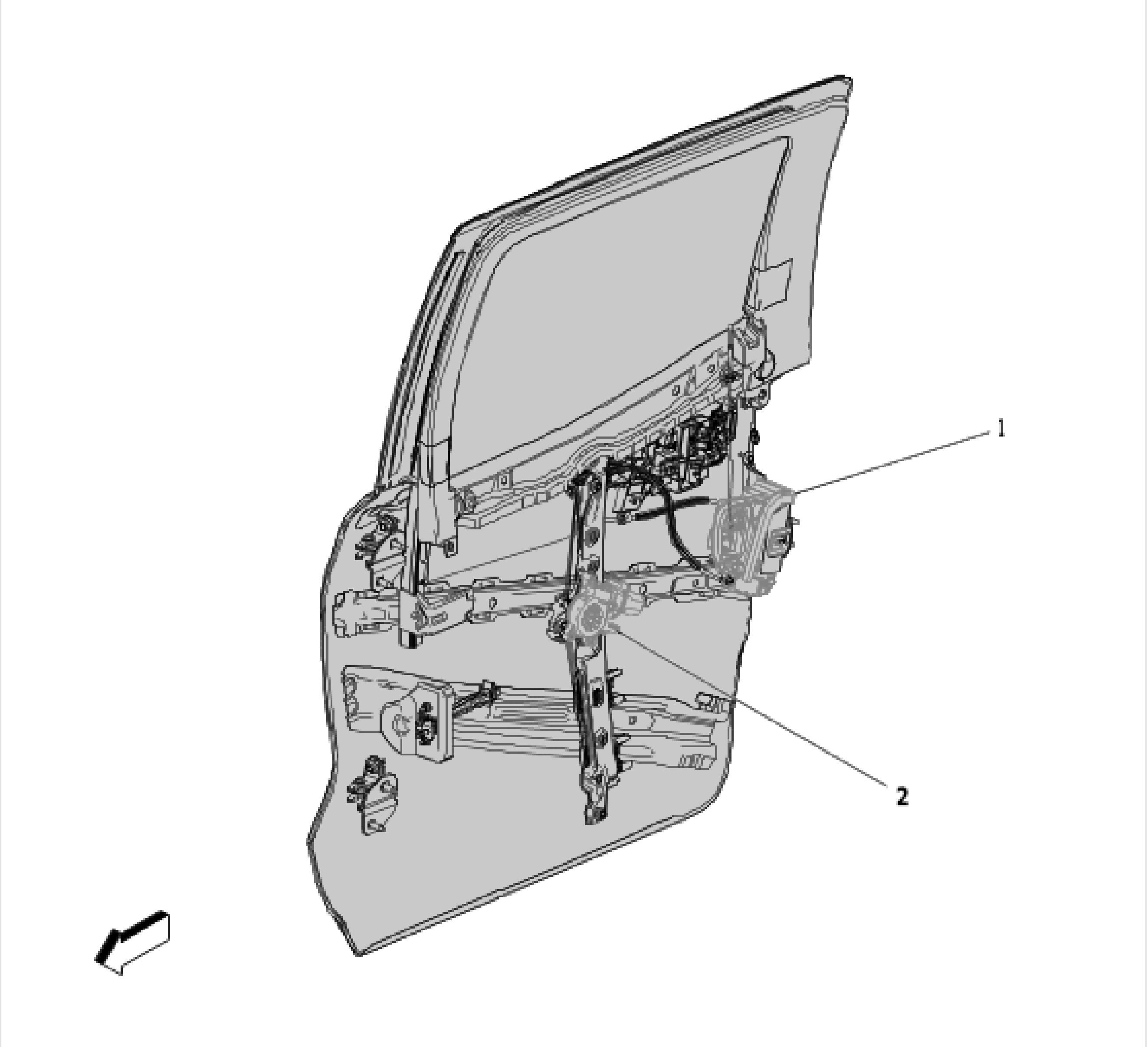
Left Rear Door Trim Components



6178237

Items
(1) S79LR Rear Side Door Window Switch - Left
(2) P19AL Radio Rear Side Door Speaker - Left (UQA / UQ3)

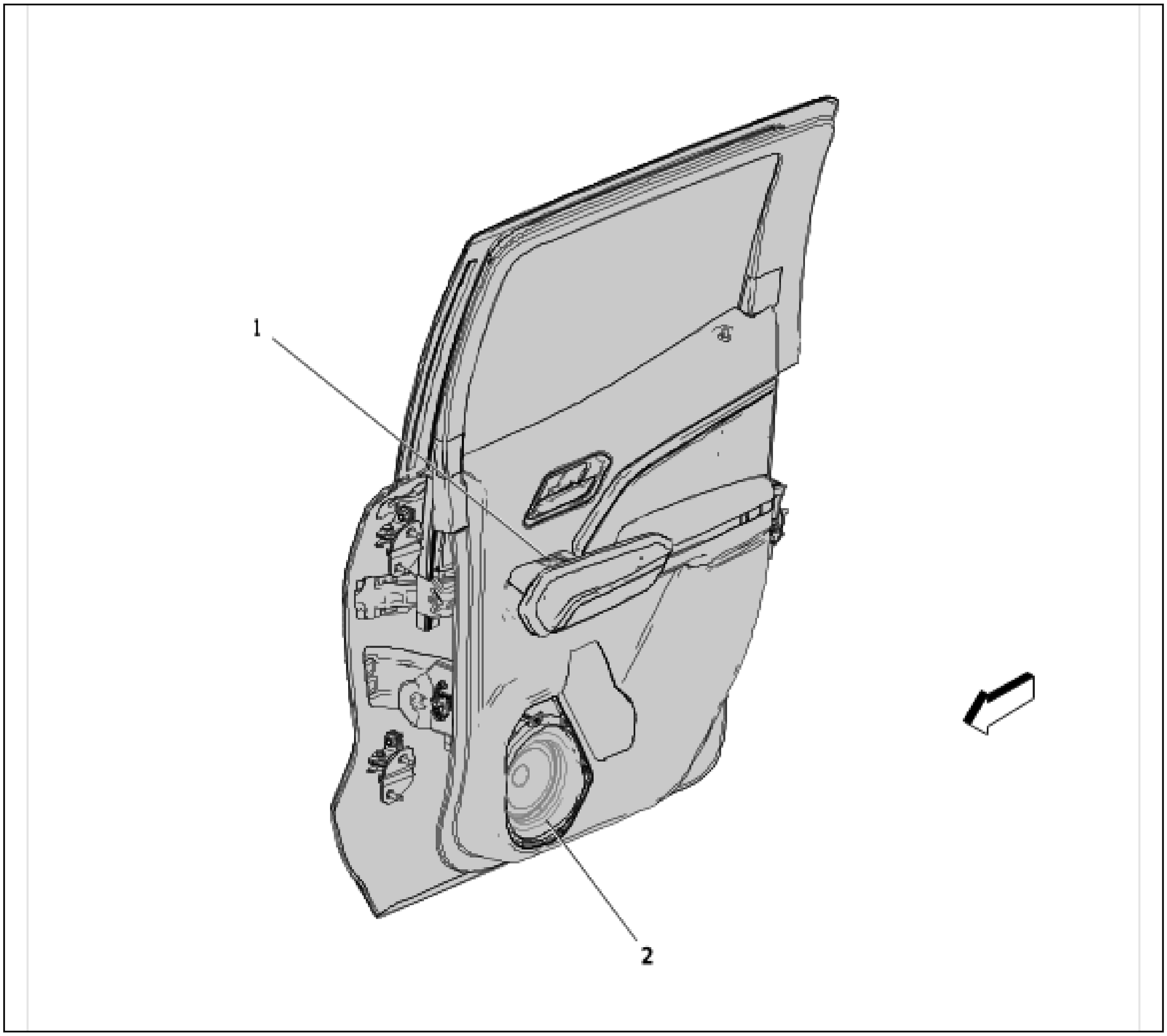
Right Rear Door Components



6178238

Items
(1) A23RR Rear Side Door Latch - Right
(2) M74RR Rear Side Door Window Regulator Motor - Right

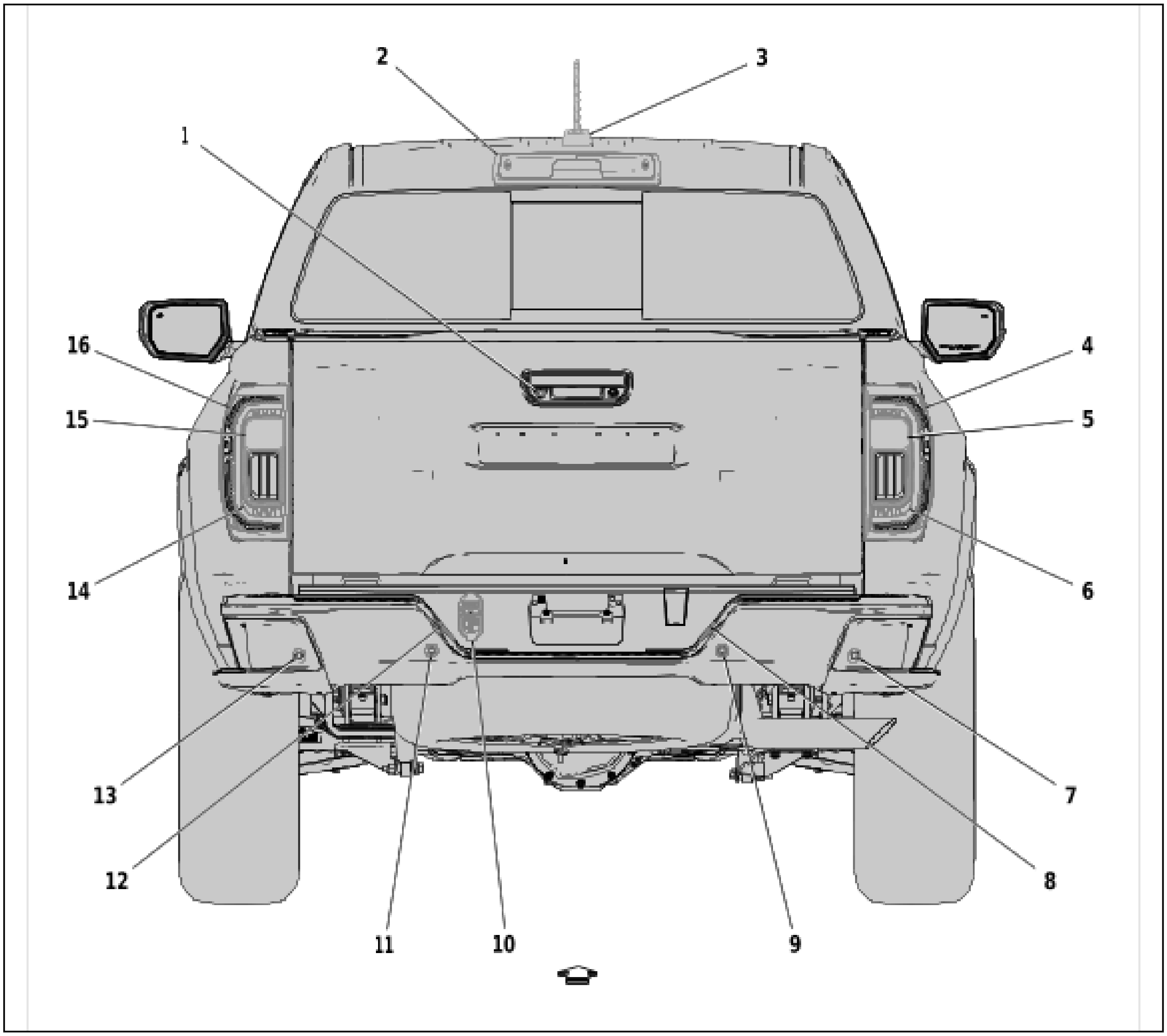
Right Rear Door Trim Components



6178239

Items
(1) S79RR Rear Side Door Window Switch - Right
(2) P19AM Radio Rear Side Door Speaker - Right (UQA / UQ3)

Rear of Vehicle Components

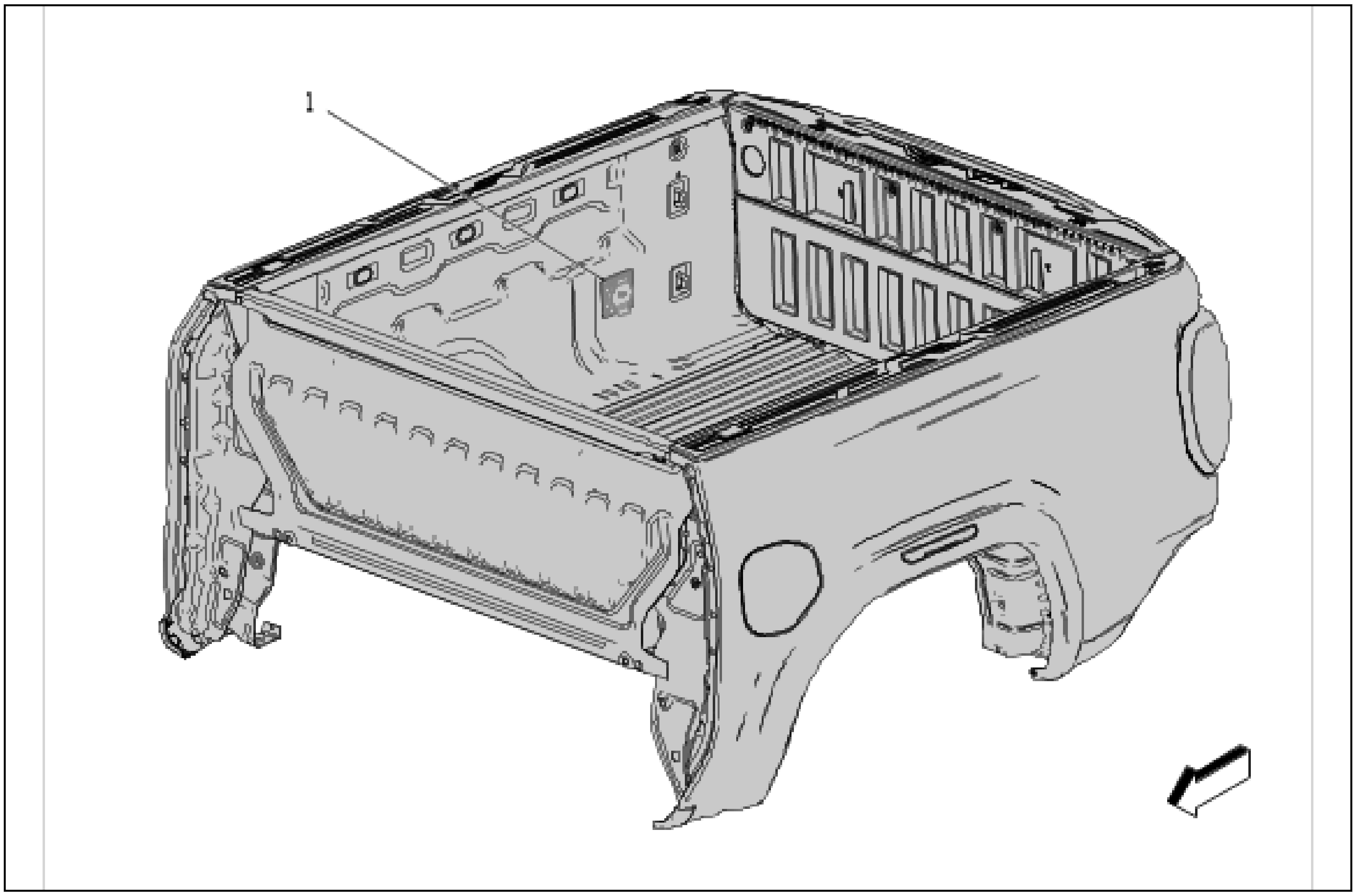


6178240

Items
(1) B87 Rearview Driver Information Camera (UV2 / UVB)
(2) E6 High Mount Stop Lamp
(3) T4P High Frequency Antenna (U2K/(- U2Q - U2K)/U2Q)
(4) K174R Rear Body Structure Stop Lamp LED Driver Module - Right
(5) E5B Backup Bulb - Right
(6) E42R Rear Body Structure Stop Lamp - Right
(7) B306H Parking Assist Alarm Sensor - Rear Right Outer
(8) E7L Rear License Plate Lamp - Left
(9) B306G Parking Assist Alarm Sensor - Rear Right Middle
(10) X88B Tow Vehicle Electrical Receptacle
(11) B306F Parking Assist Alarm Sensor - Rear Left Middle
(12) E7R Rear License Plate Lamp - Right

Items
(13) B306E Parking Assist Alarm Sensor - Rear Left Outer
(14) E42L Rear Body Structure Stop Lamp - Left
(15) E5A Backup Bulb - Left
(16) K174L Rear Body Structure Stop Lamp LED Driver Module - Left

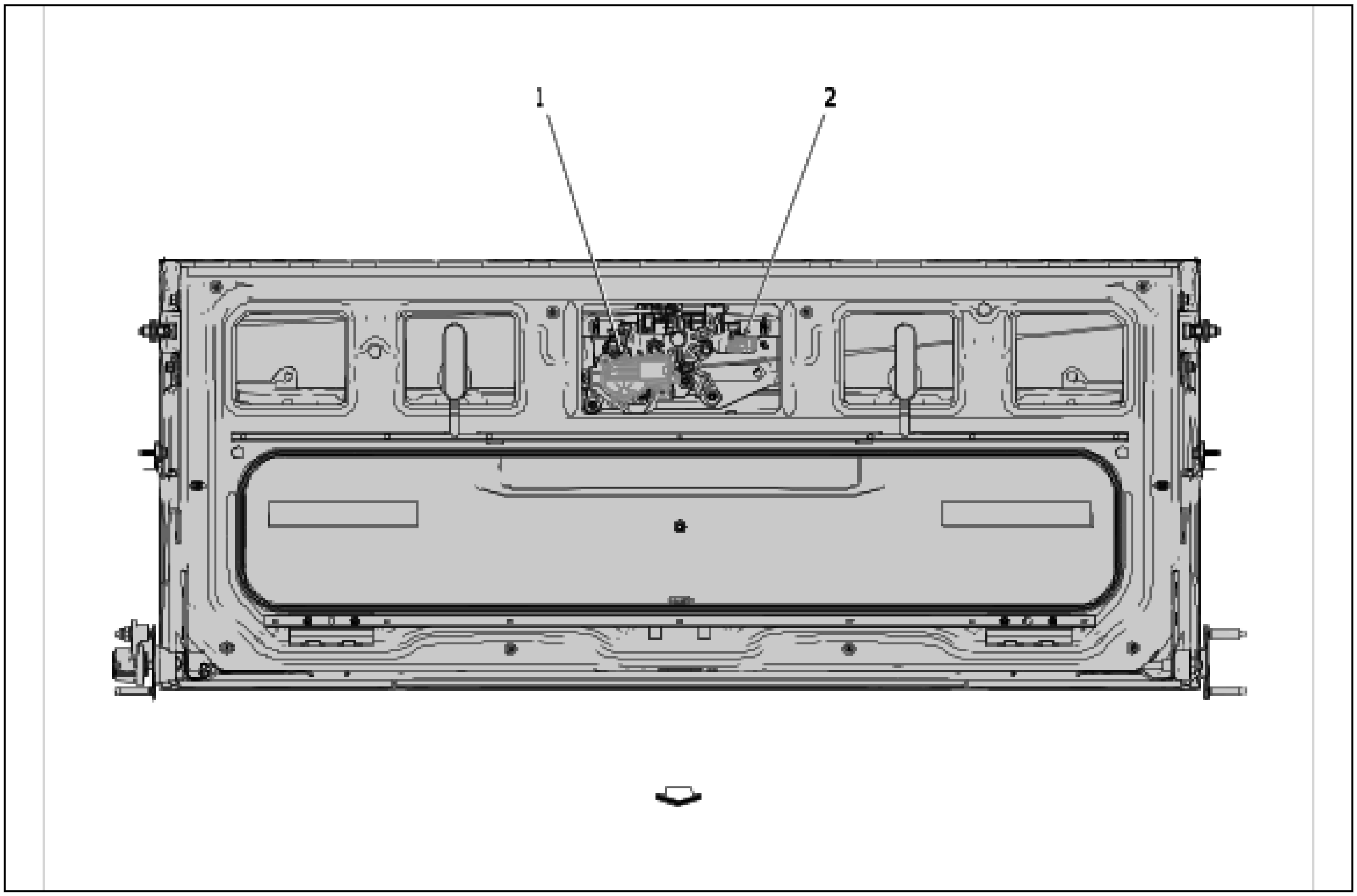
Pickup Box Components



6178242

Items
(1) X81AP Pickup Box Accessory Power Receptacle - 110V AC (KC9)

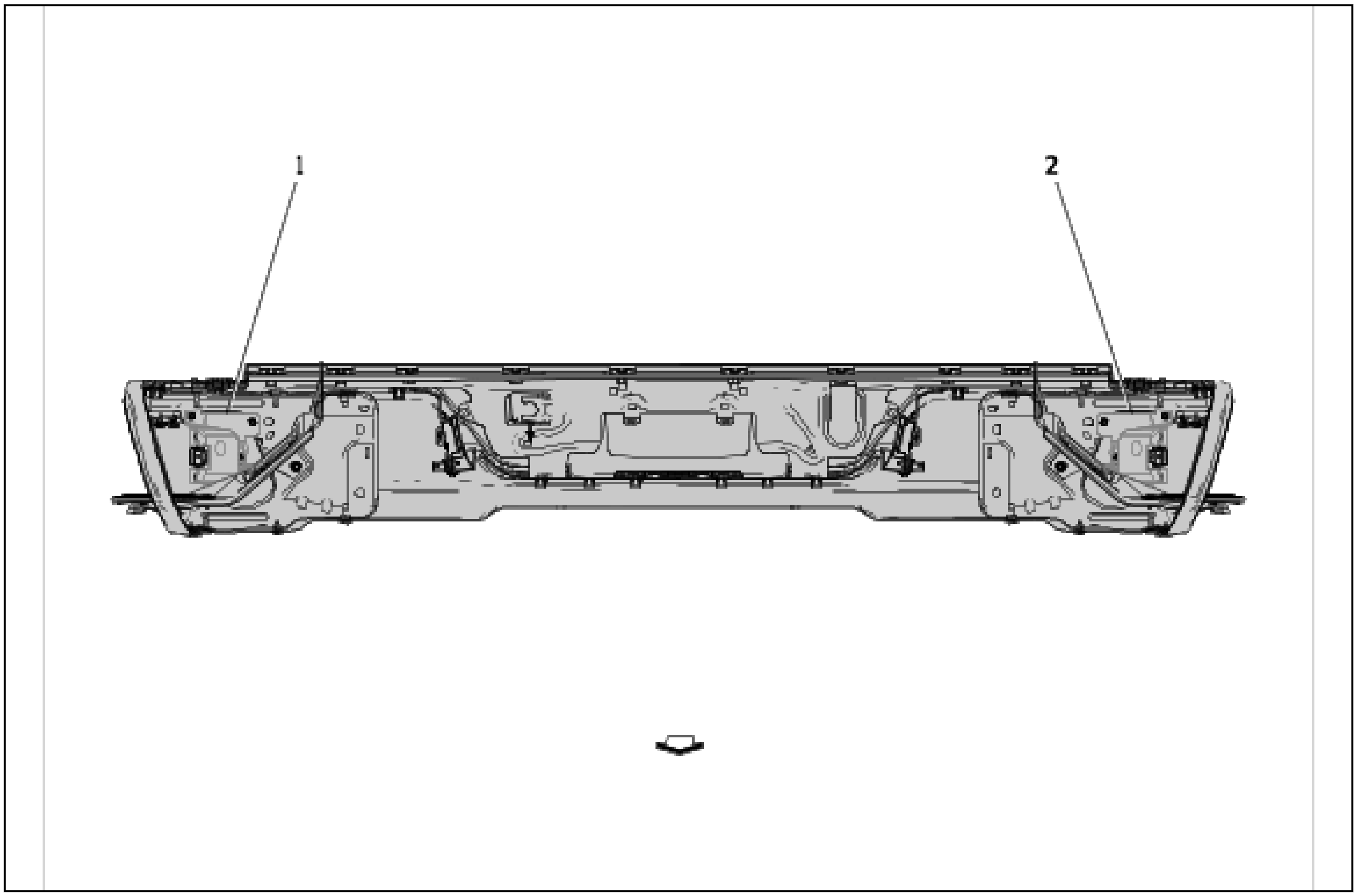
Endgate Components



6178243

Items
(1) A99 Pickup Box Endgate Latch
(2) B87 Rearview Driver Information Camera (UV2 / UVB)

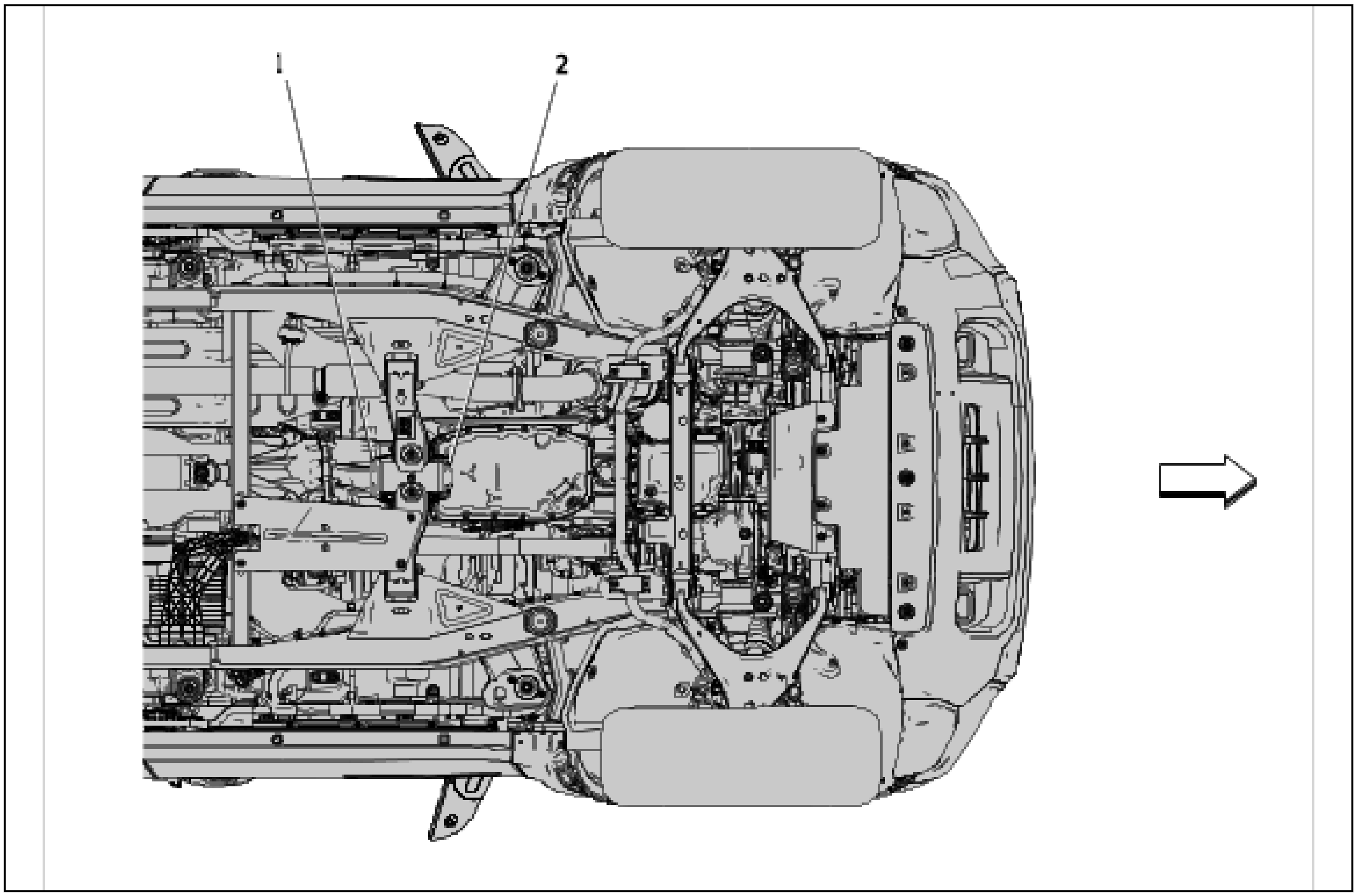
Rear Bumper - Inside



6178244

Items
(1) B218R Side Obstacle Detection Control Module - Right
(2) B218L Side Obstacle Detection Control Module - Left (UKI)

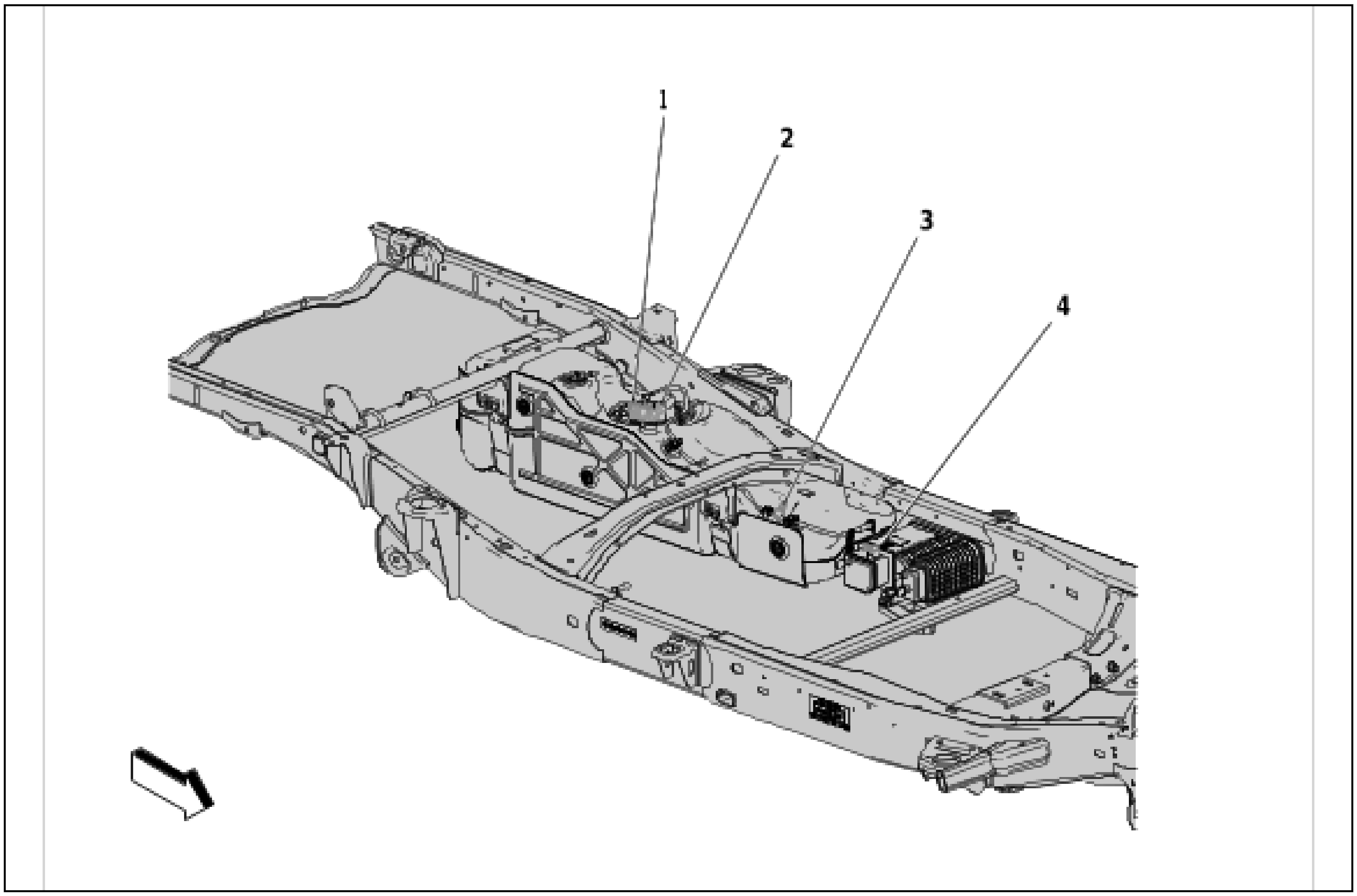
Center Underbody Components



6178245

Items
(1) B384 Rearview Underbody Camera (UXA)
(2) B385 Front View Underbody Camera (UXA)

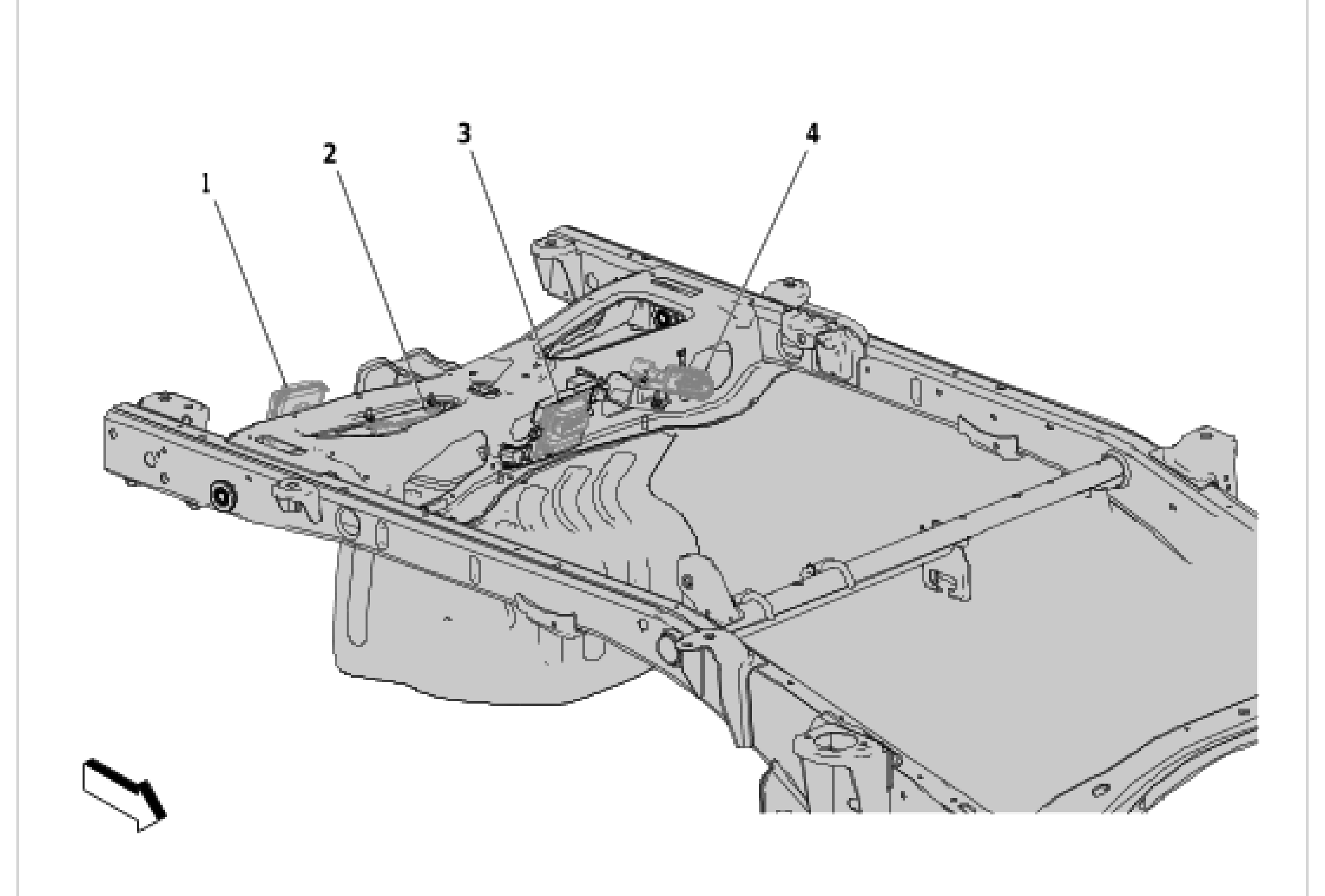
Fuel Tank and Emission Components



6178246

Items
(1) B150 Fuel Tank Pressure Sensor
(2) A7 Fuel Tank Fuel Pump Module
(3) B47 Fuel Pressure Sensor
(4) Q13 Evaporative Emission Canister Vent Solenoid Valve

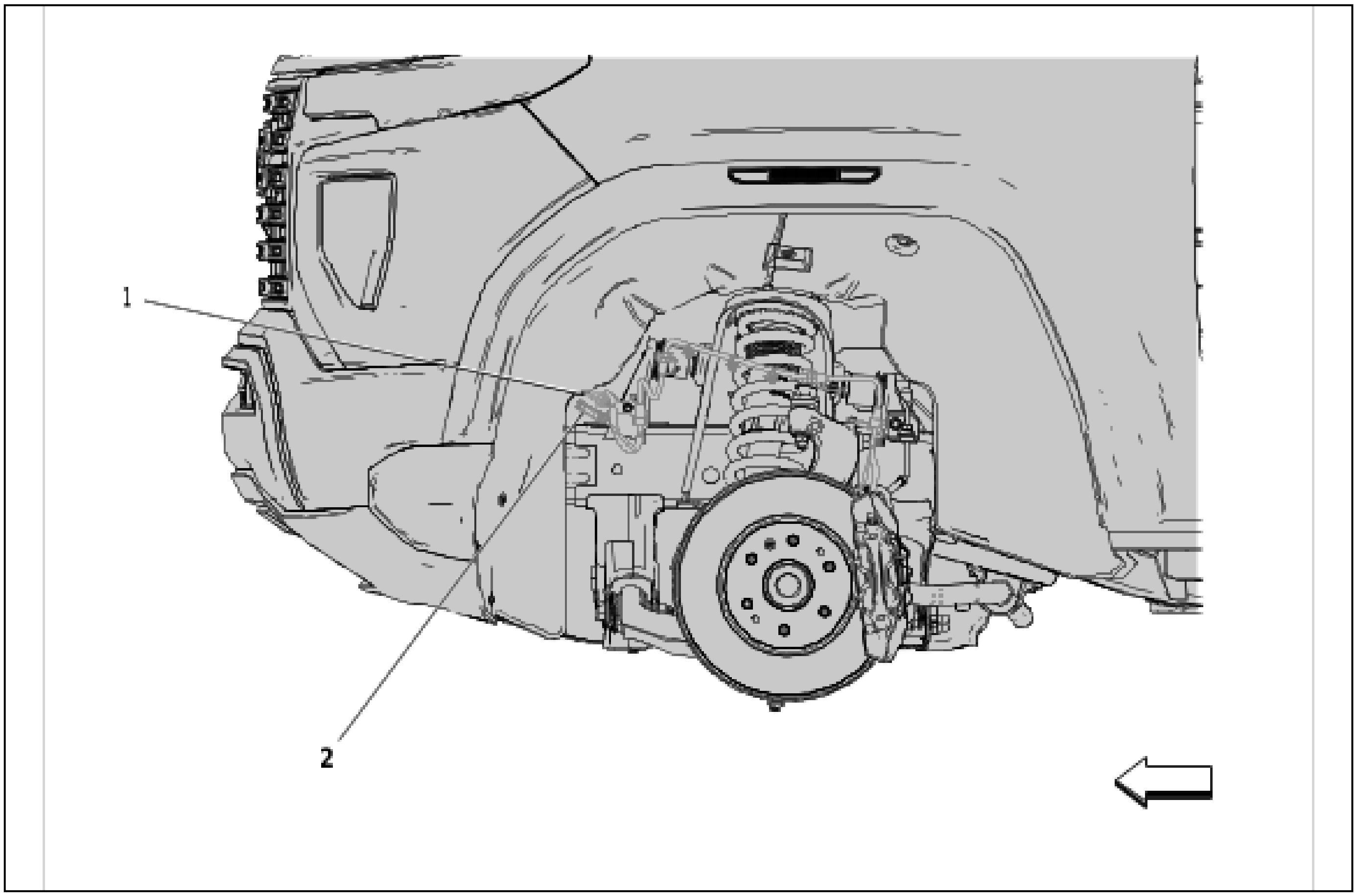
Rear Underbody Components



6178247

Items
(1) K68 Trailer Lamp Control Module
(2) K67 Trailer Brake Control Module
(3) K38 Chassis Control Module
(4) K111 Fuel Pump Power Control Module

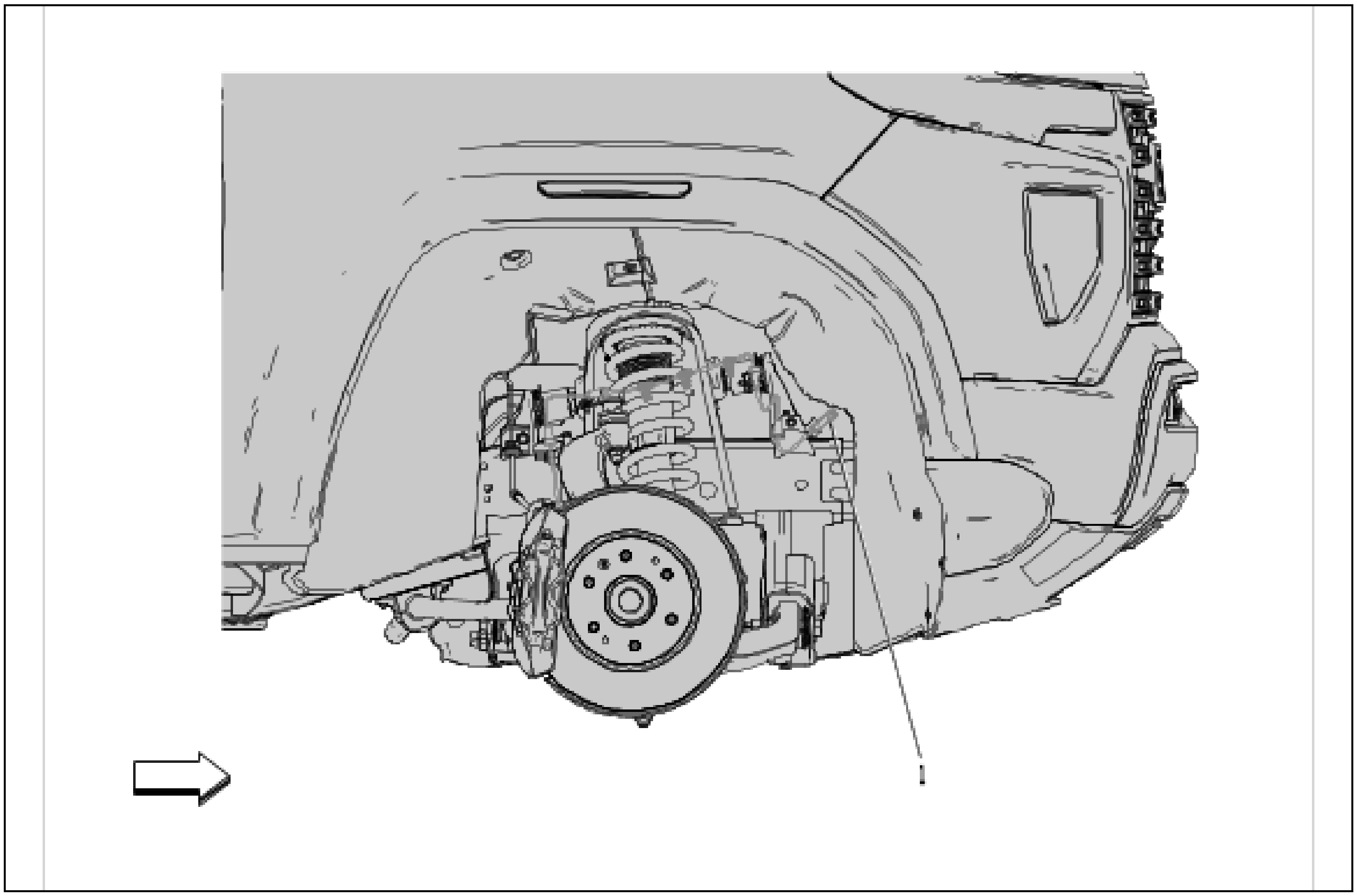
Left Front Wheelhouse Components



6178248

Items
(1) B172LF Front Disc Brake Pad Wear Sensor - Left
(2) B5LF Front Wheel Speed Sensor - Left

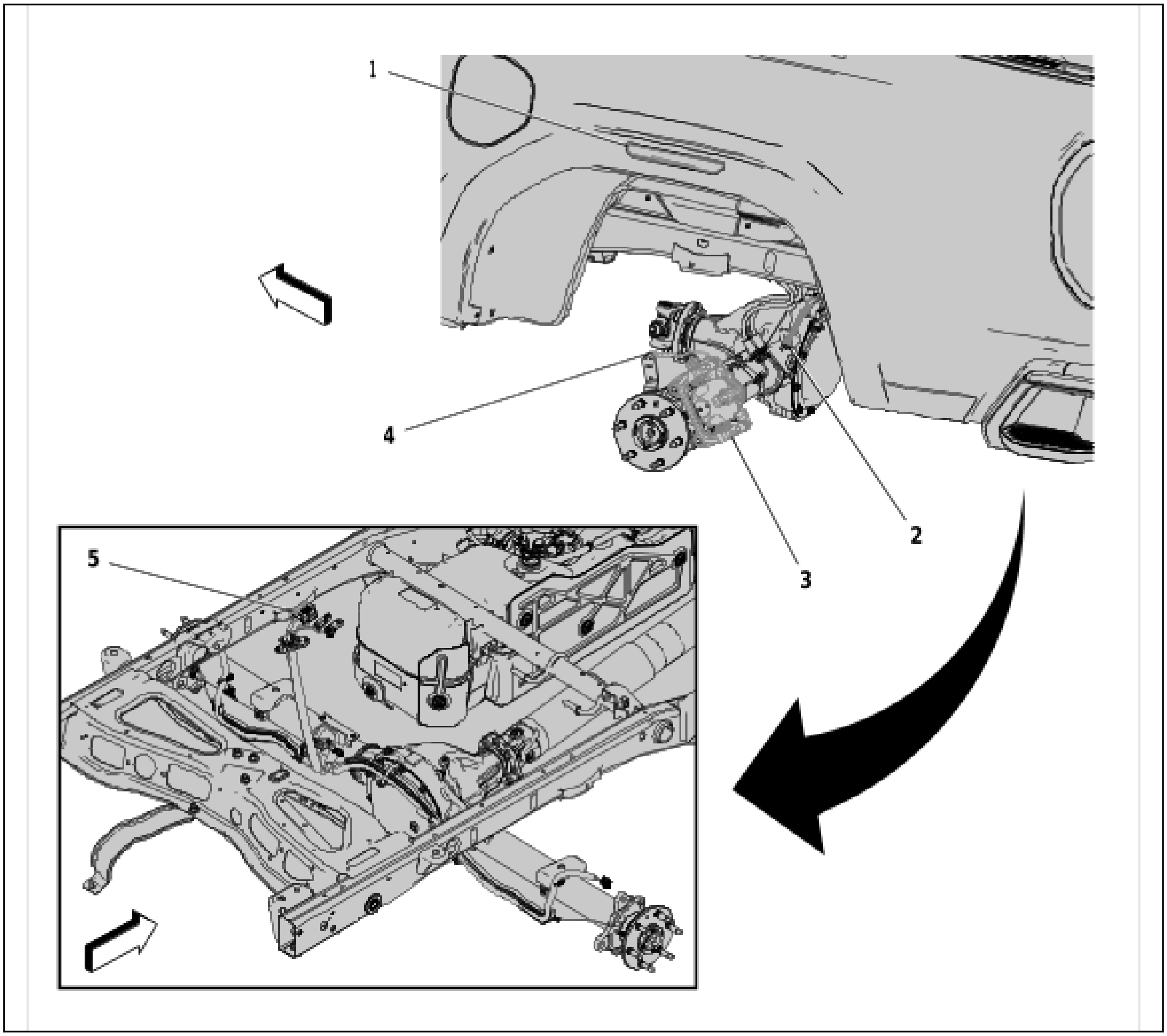
Right Front Wheelhouse Components



6178249

Items
(1) B5RF Front Wheel Speed Sensor - Right

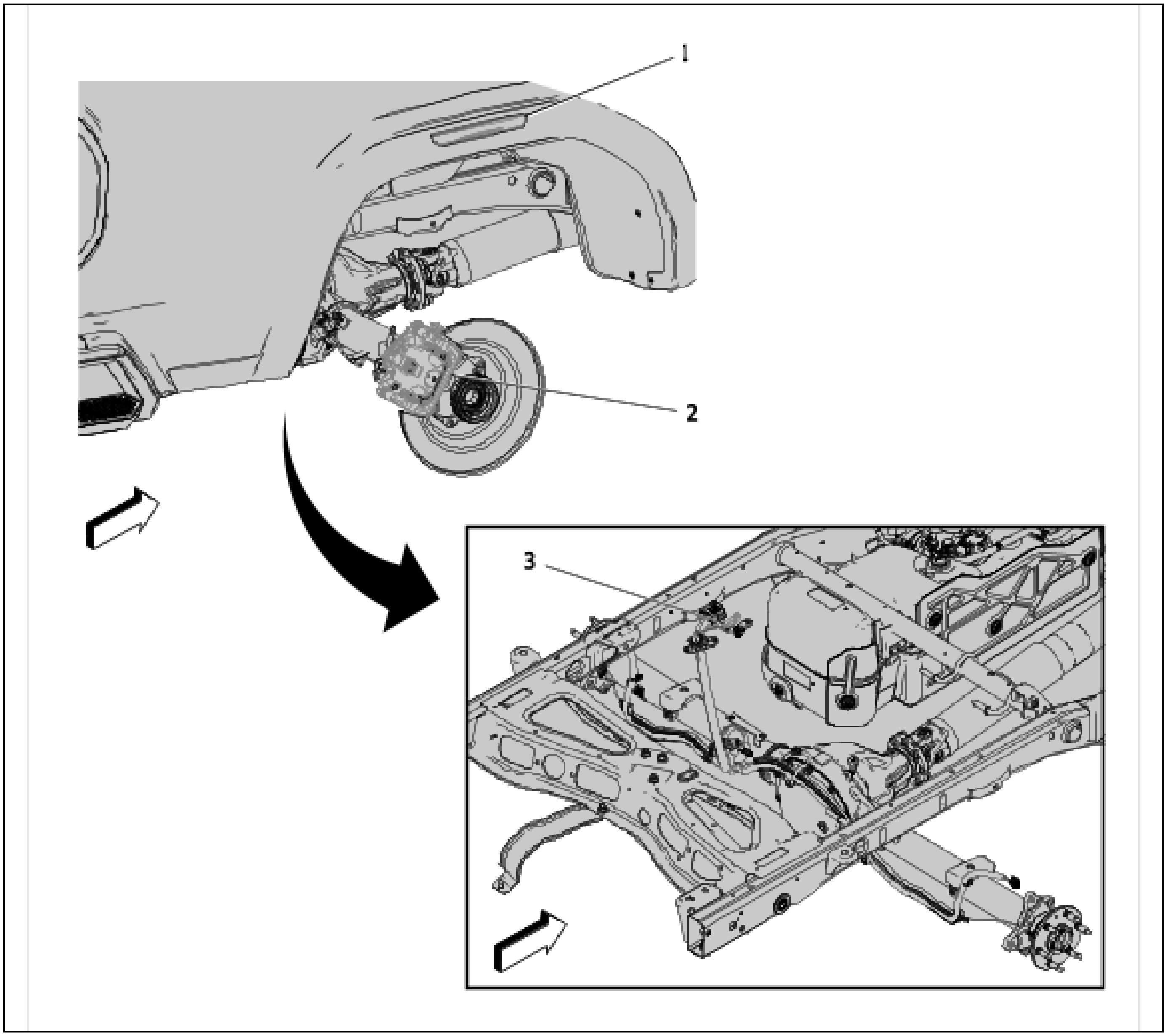
Left Rear Wheelhouse Components



6178250

Items
(1) E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding
(2) Q9R Differential Locking Actuator - Rear
(3) M104L Parking Brake Actuator - Left
(4) B172LR Rear Disc Brake Pad Wear Sensor - Left
(5) B5LR Rear Wheel Speed Sensor - Left

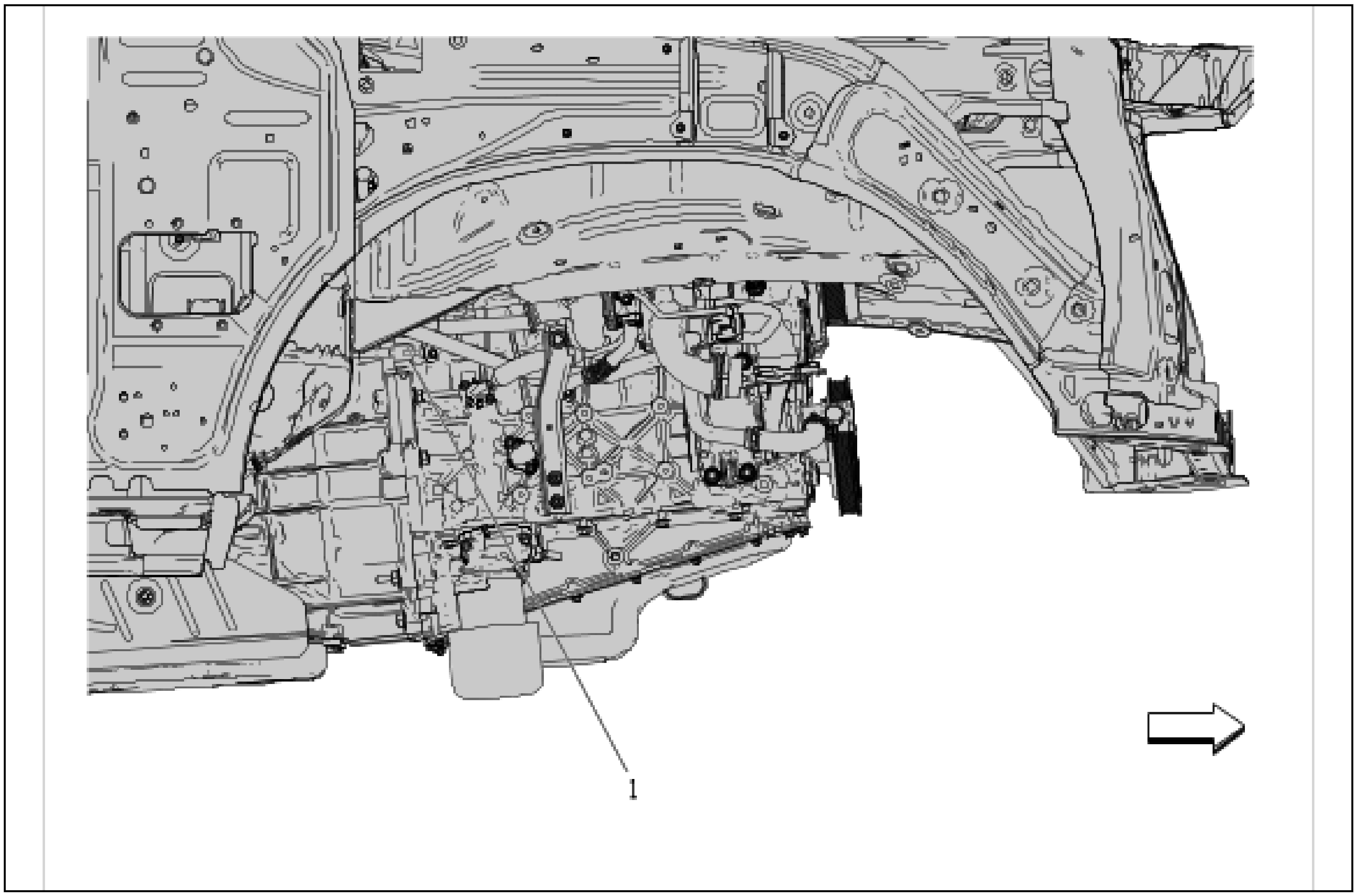
Right Rear Wheelhouse Components



6178251

Items
(1) E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding
(2) M104R Parking Brake Actuator - Right
(3) B5RR Rear Wheel Speed Sensor - Right

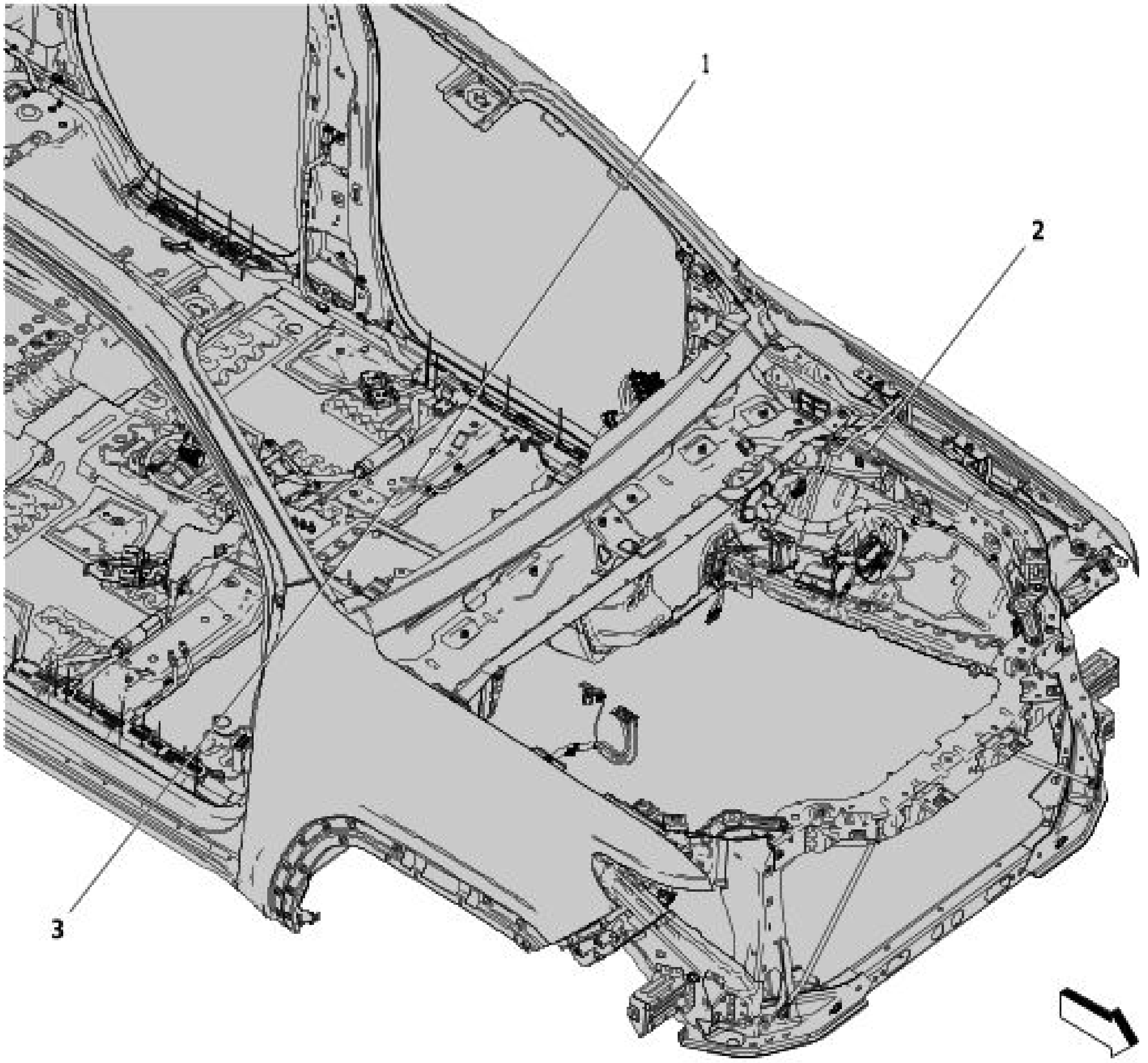
G100



6178252

Items
(1) G100 Battery Negative Cable

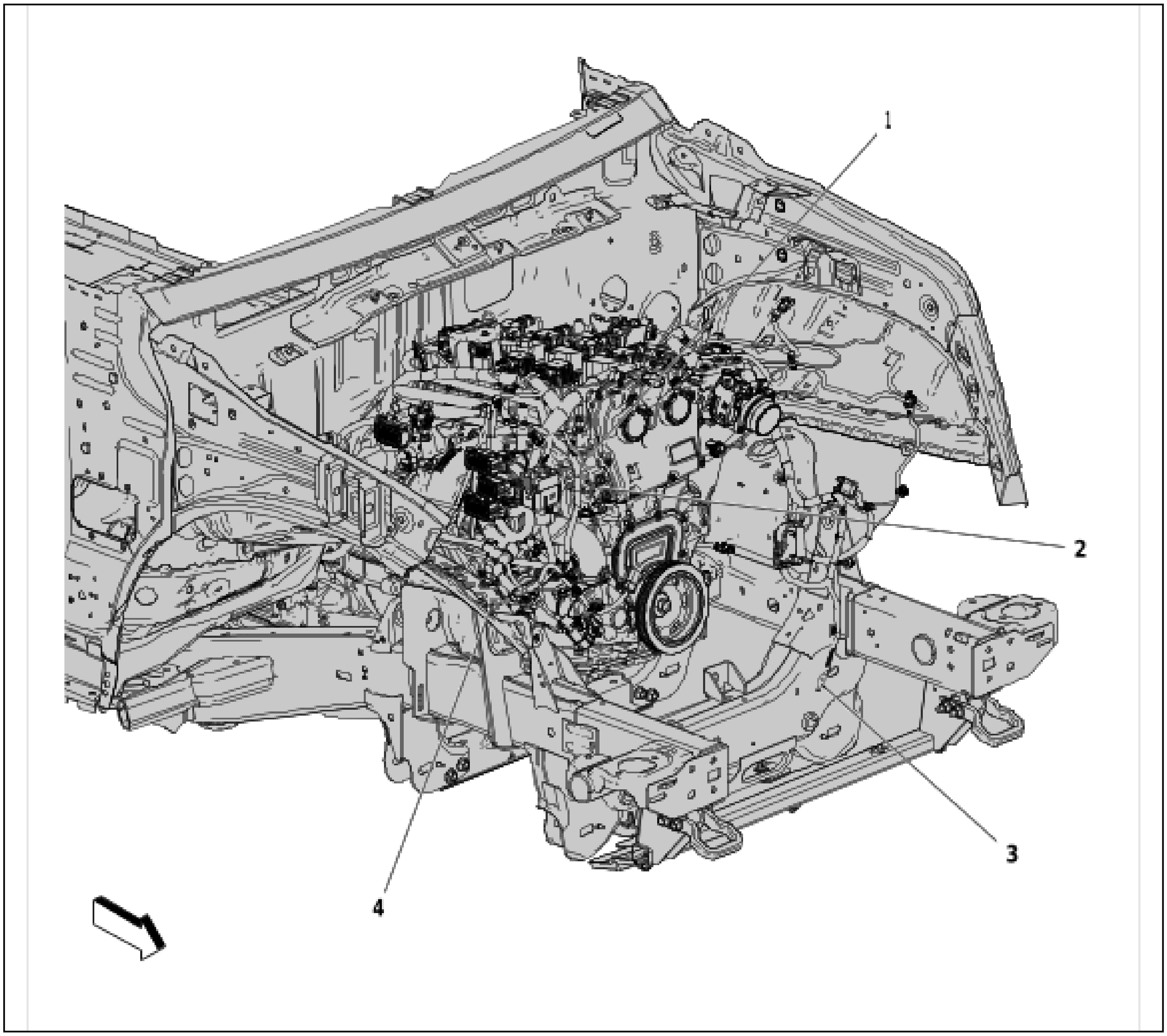
G101A, G101B, and G176



6178253

Items
(1) G176 Body Wiring Harness
(2) G101B Body Wiring Harness
(3) G101A Body Wiring Harness

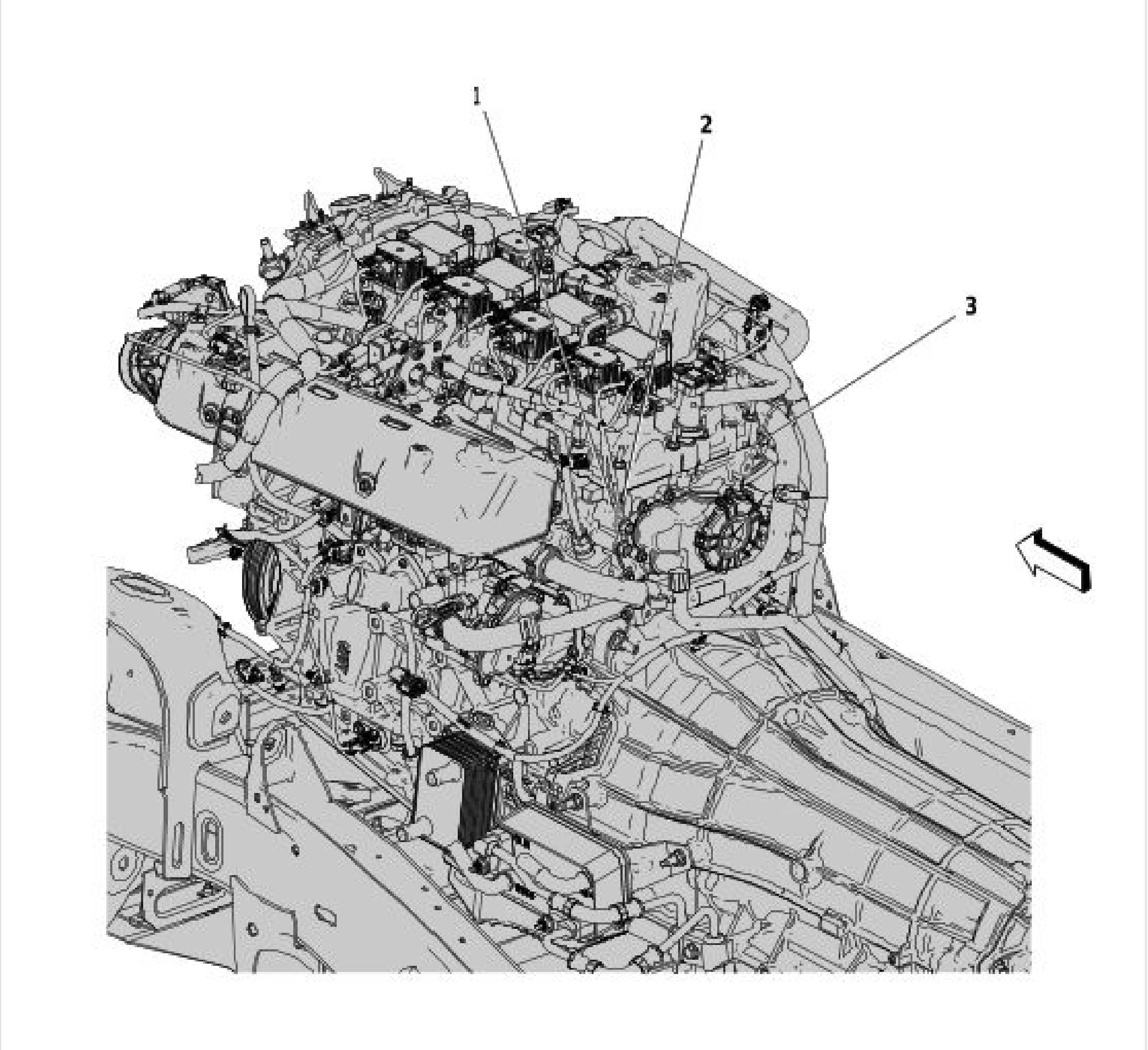
G101C, G102A, G102C, and G103



6178254

Items
(1) G102C Engine Wiring Harness
(2) G103 Engine Wiring Harness
(3) G101C Engine Wiring Harness
(4) G201A Engine Wiring Harness

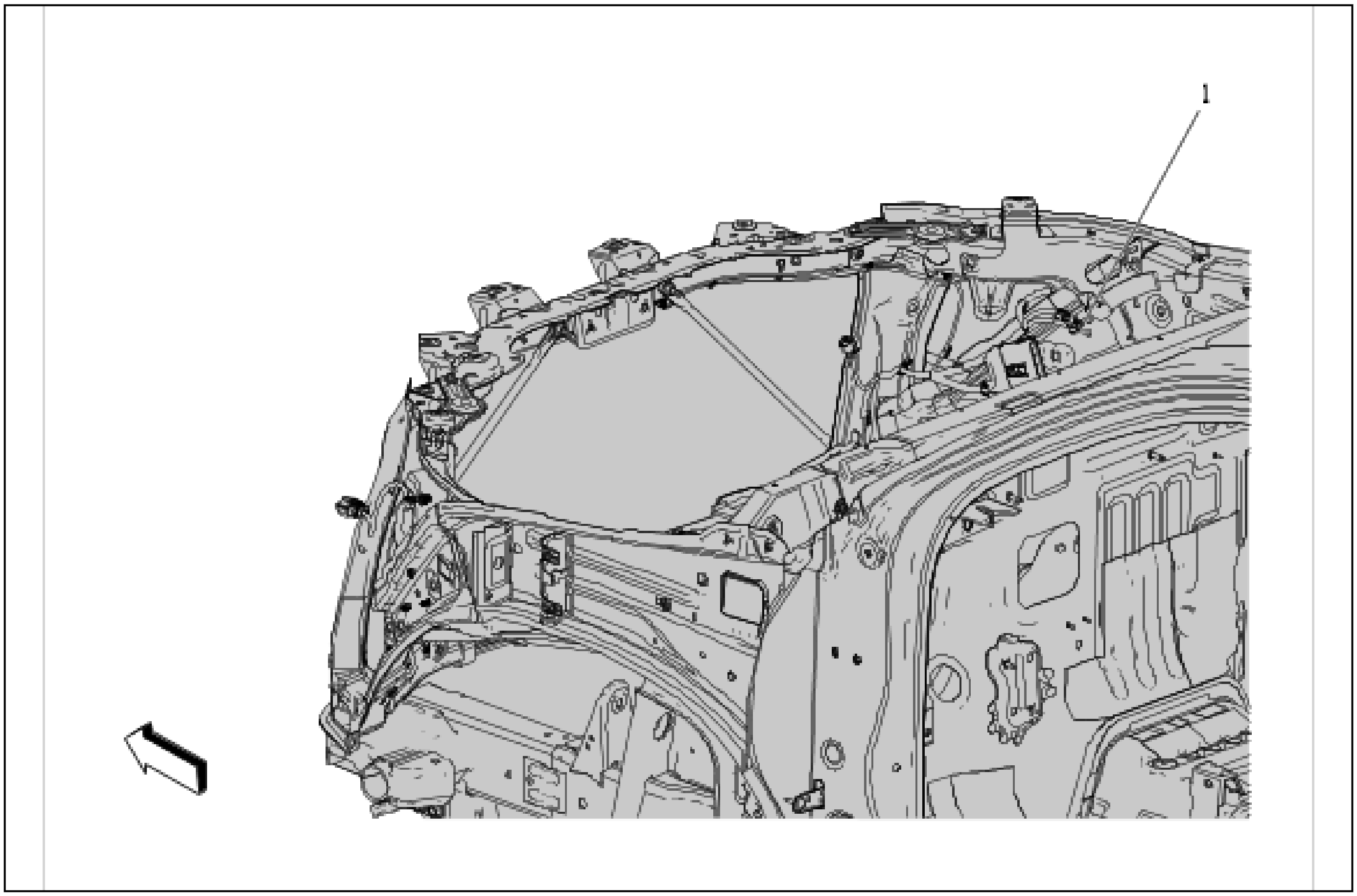
G102A, G102B, and G102D



6178255

Items
(1) G102A Engine Wiring Harness
(2) G102B Engine Wiring Harness
(3) G102D Engine Wiring Harness

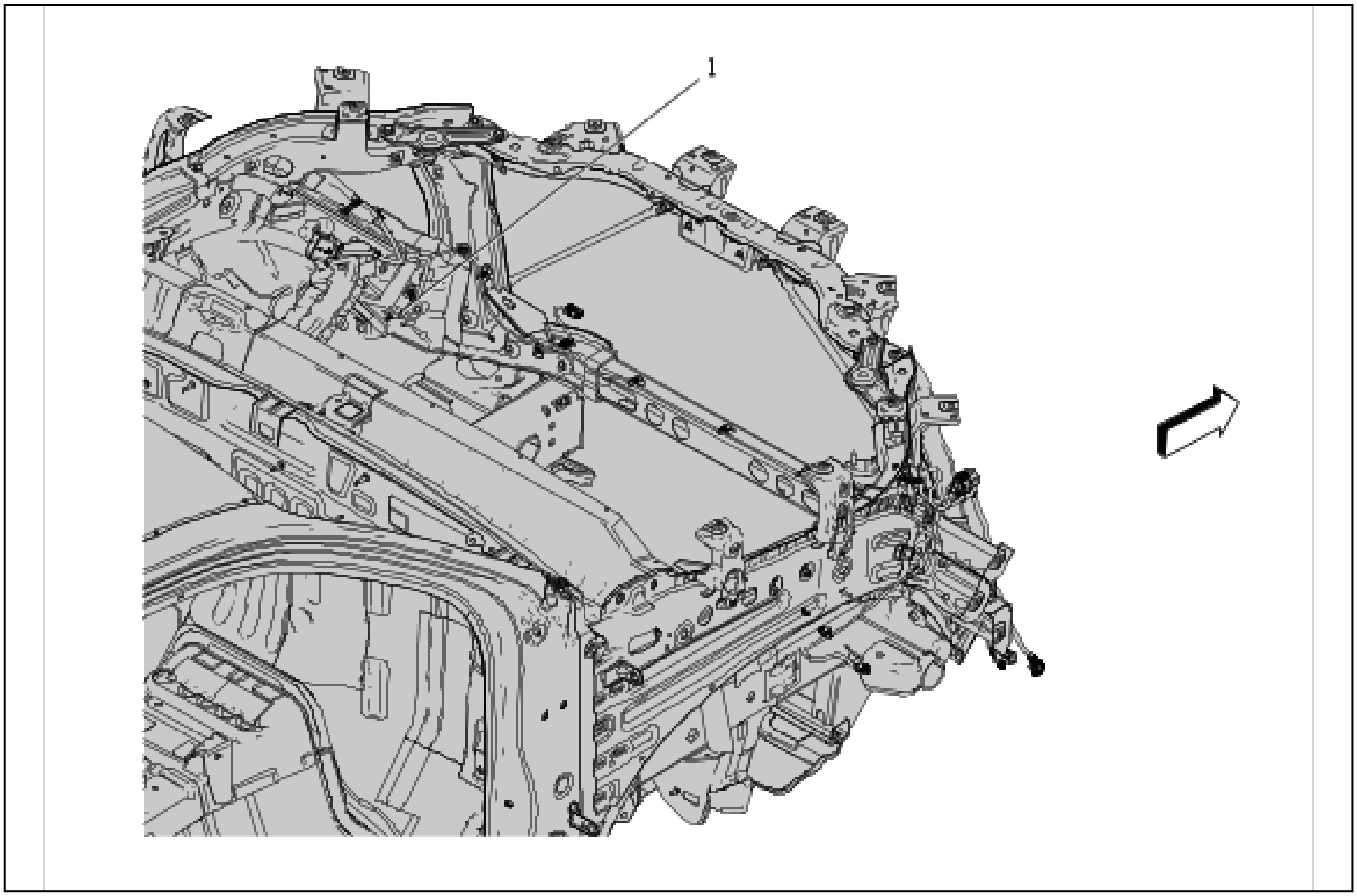
G102E



6178256

Items
(1) G102E Forward Lamp Wiring Harness

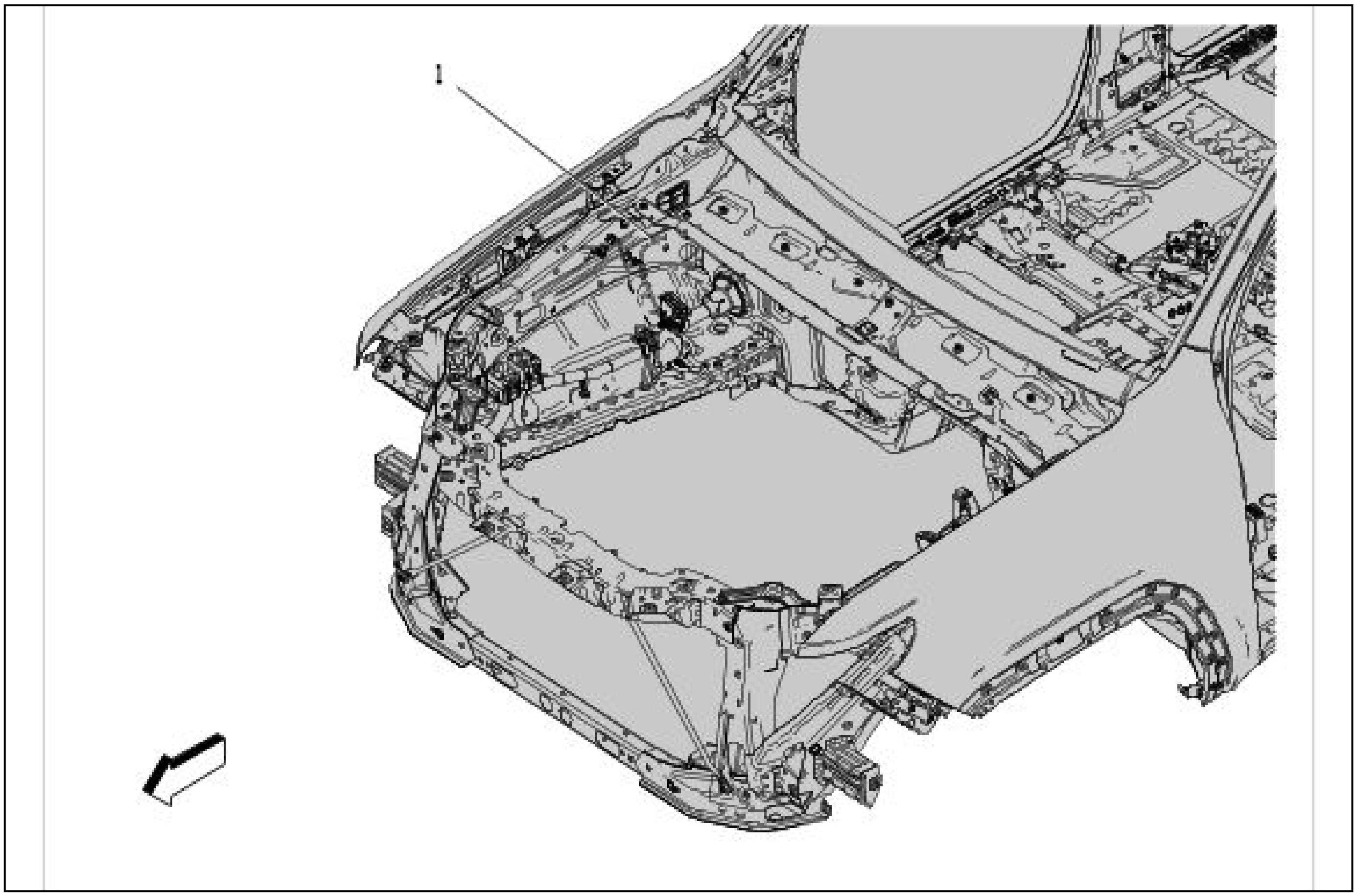
G102F



6178257

Items
(1) G102F Forward Lamp Wiring Harness

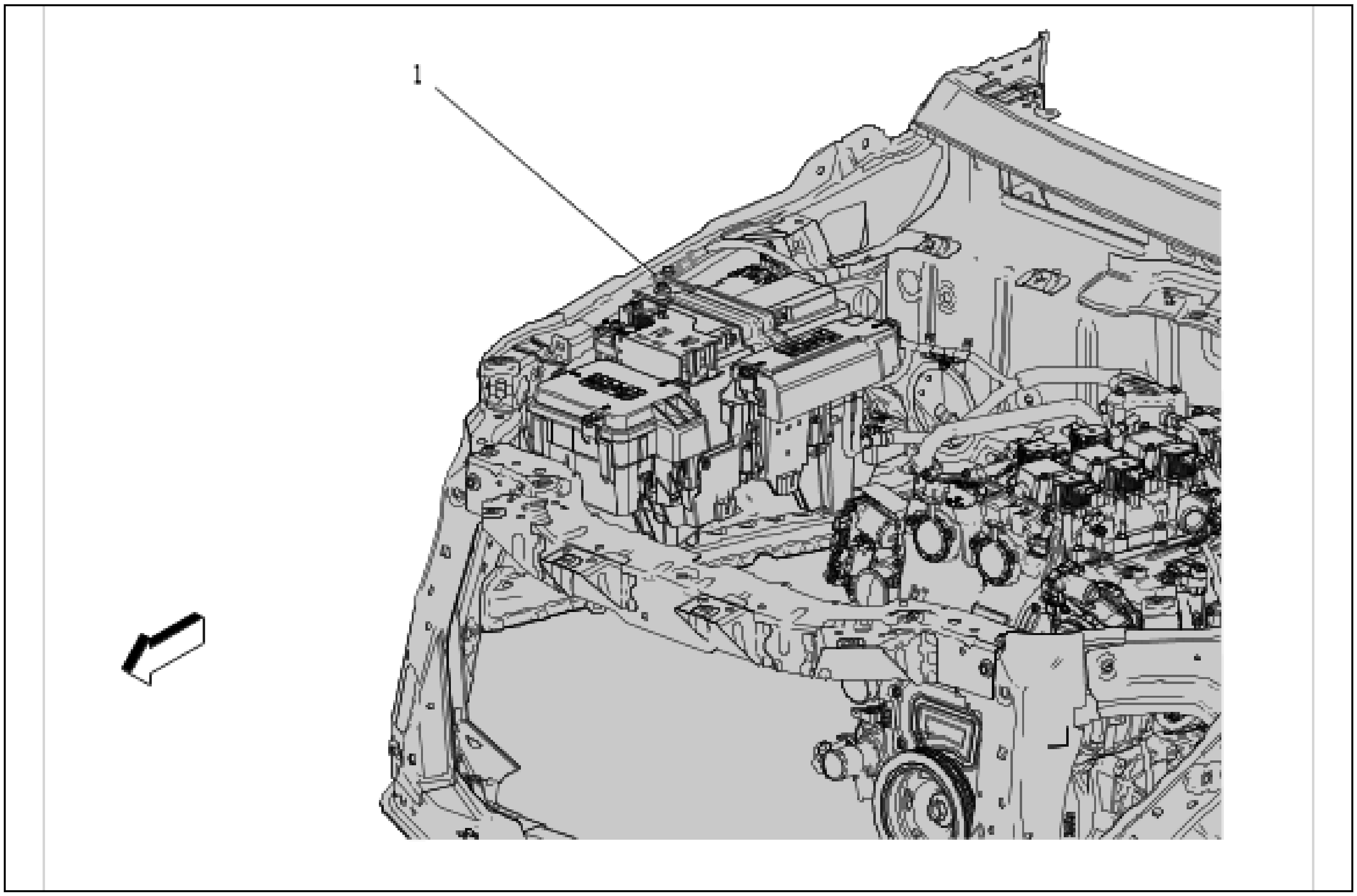
G104



6178258

Items
(1) G104 Body Wiring Harness

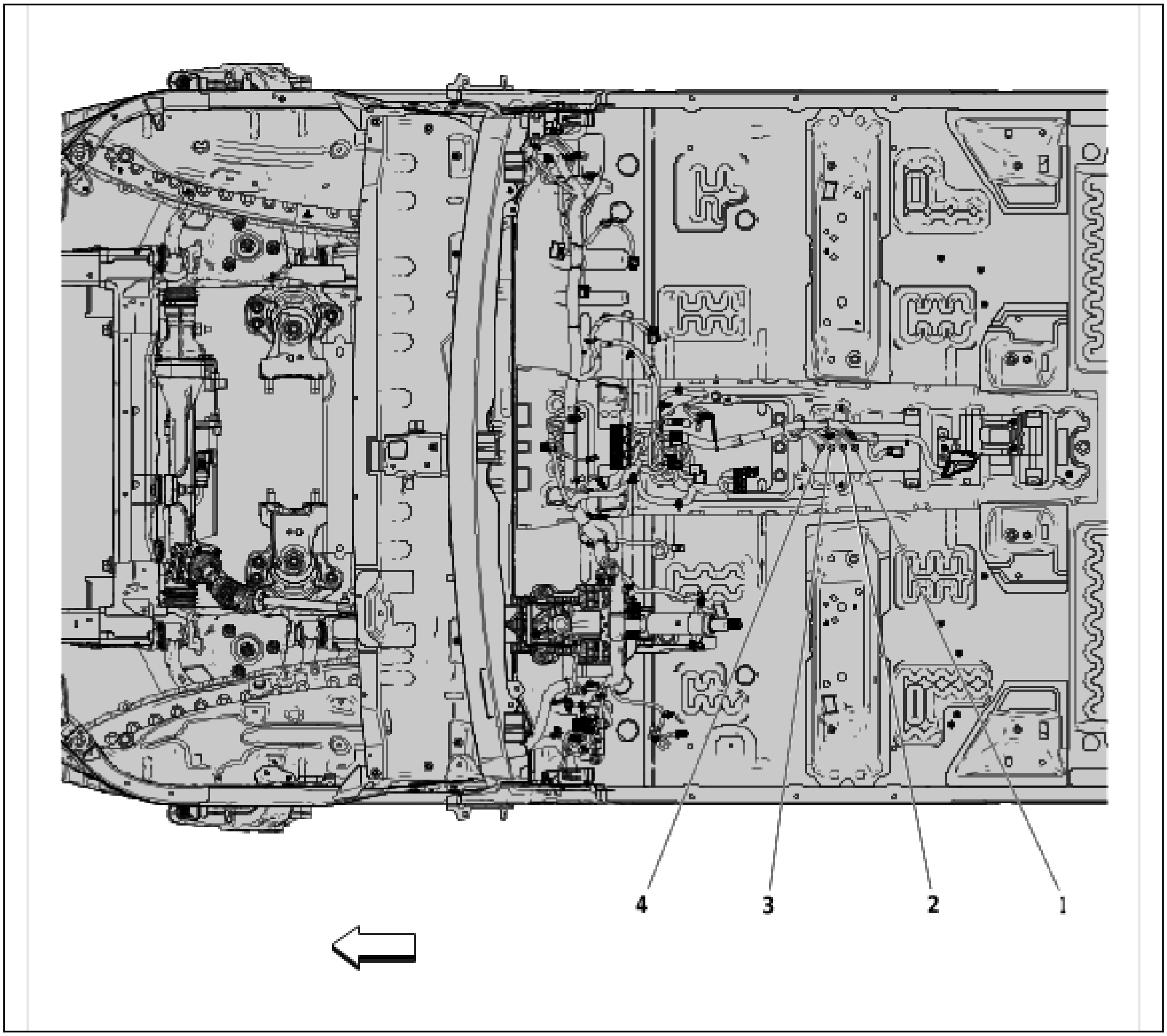
G105



6178259

Items
(1) G105 Battery Negative Cable

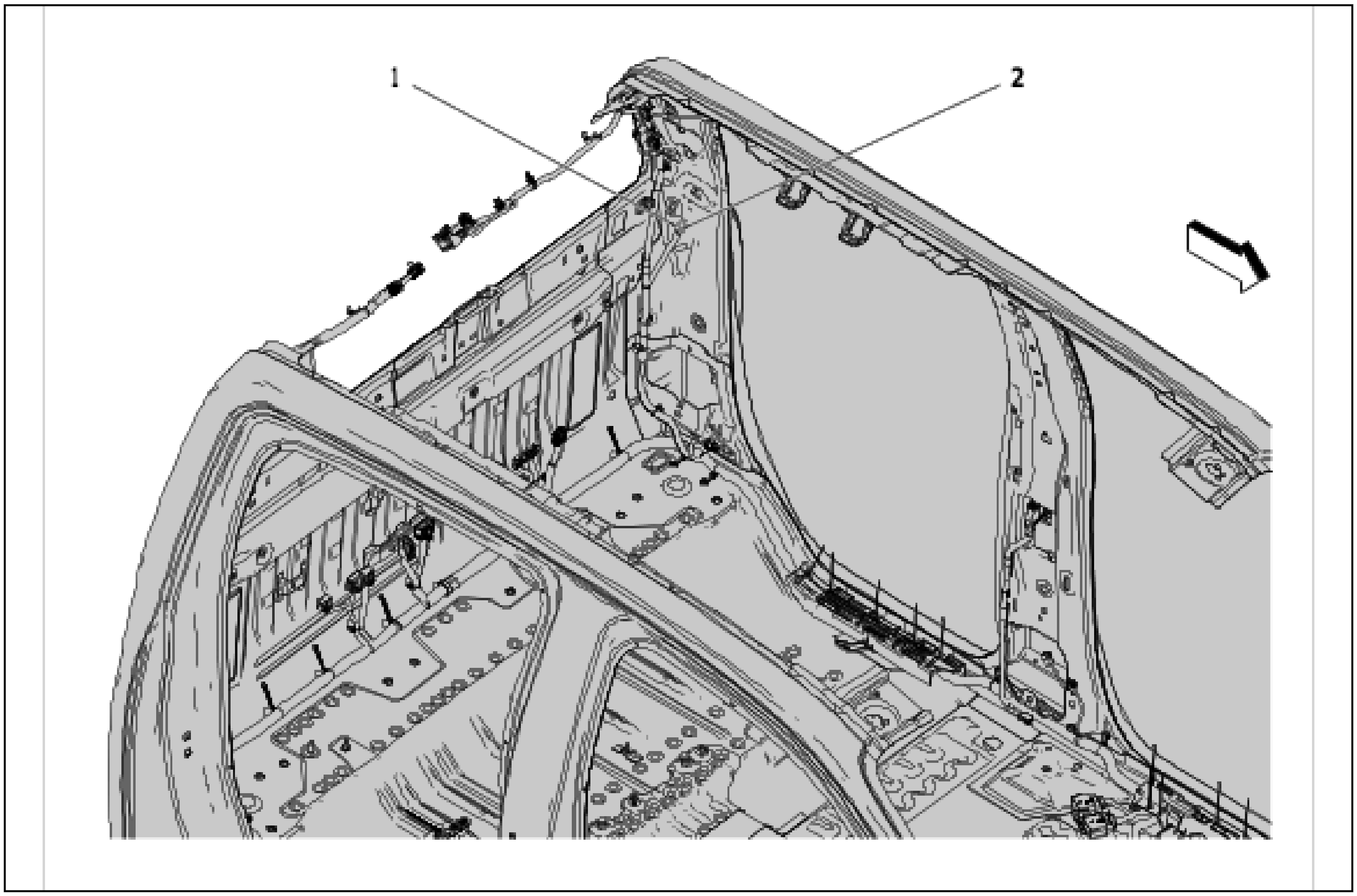
G200, G202, G203, and G204



6178261

Items
(1) G202 Instrument Panel Wiring Harness
(2) G200 Instrument Panel Wiring Harness
(3) G203 Instrument Panel Wiring Harness
(4) G204 Instrument Panel Wiring Harness

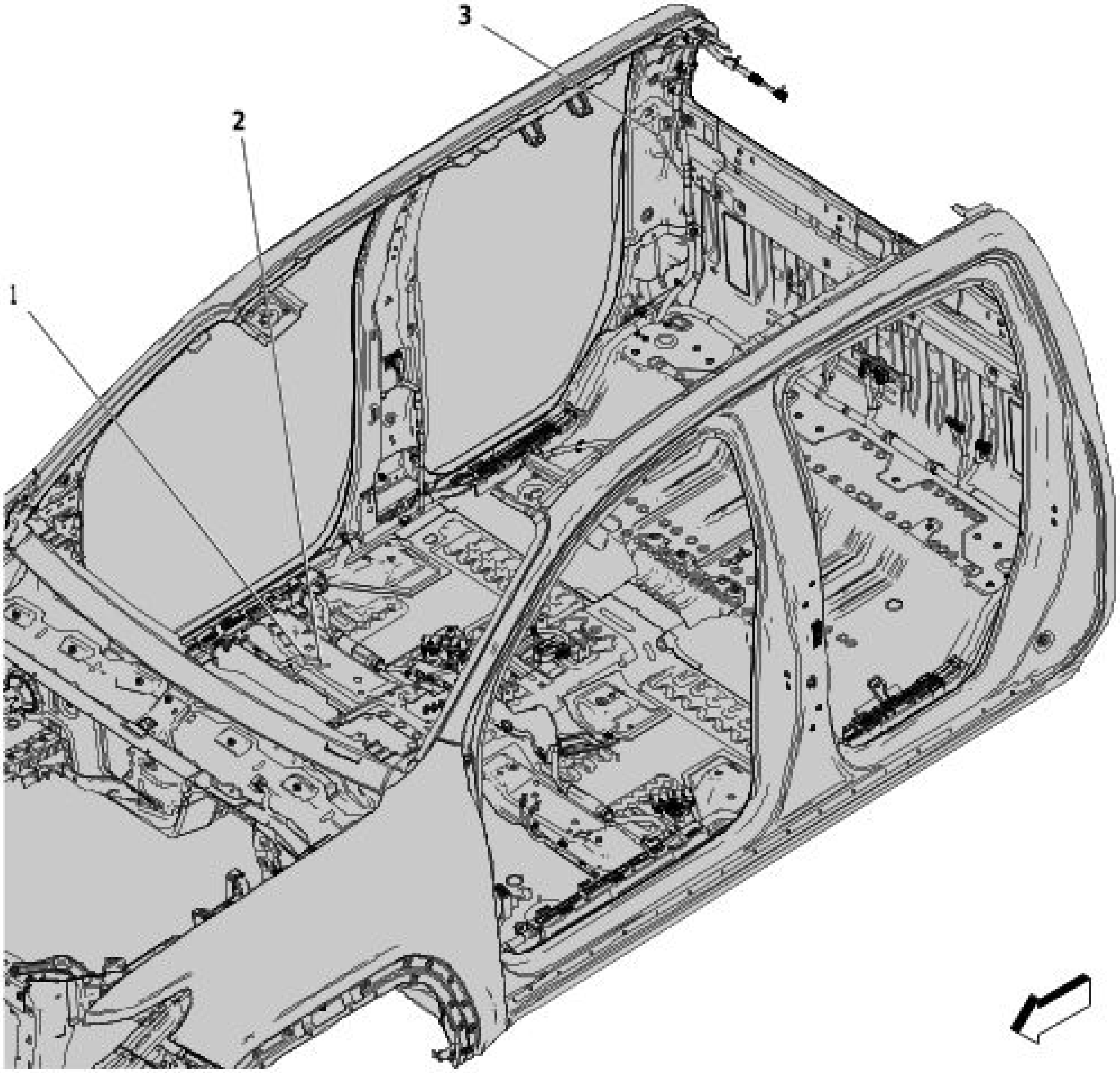
G301A and G301B



6178262

Items
(1) G301A Body Wiring Harness
(2) G301B Body Wiring Harness

G301C, G304, and G305



6178263

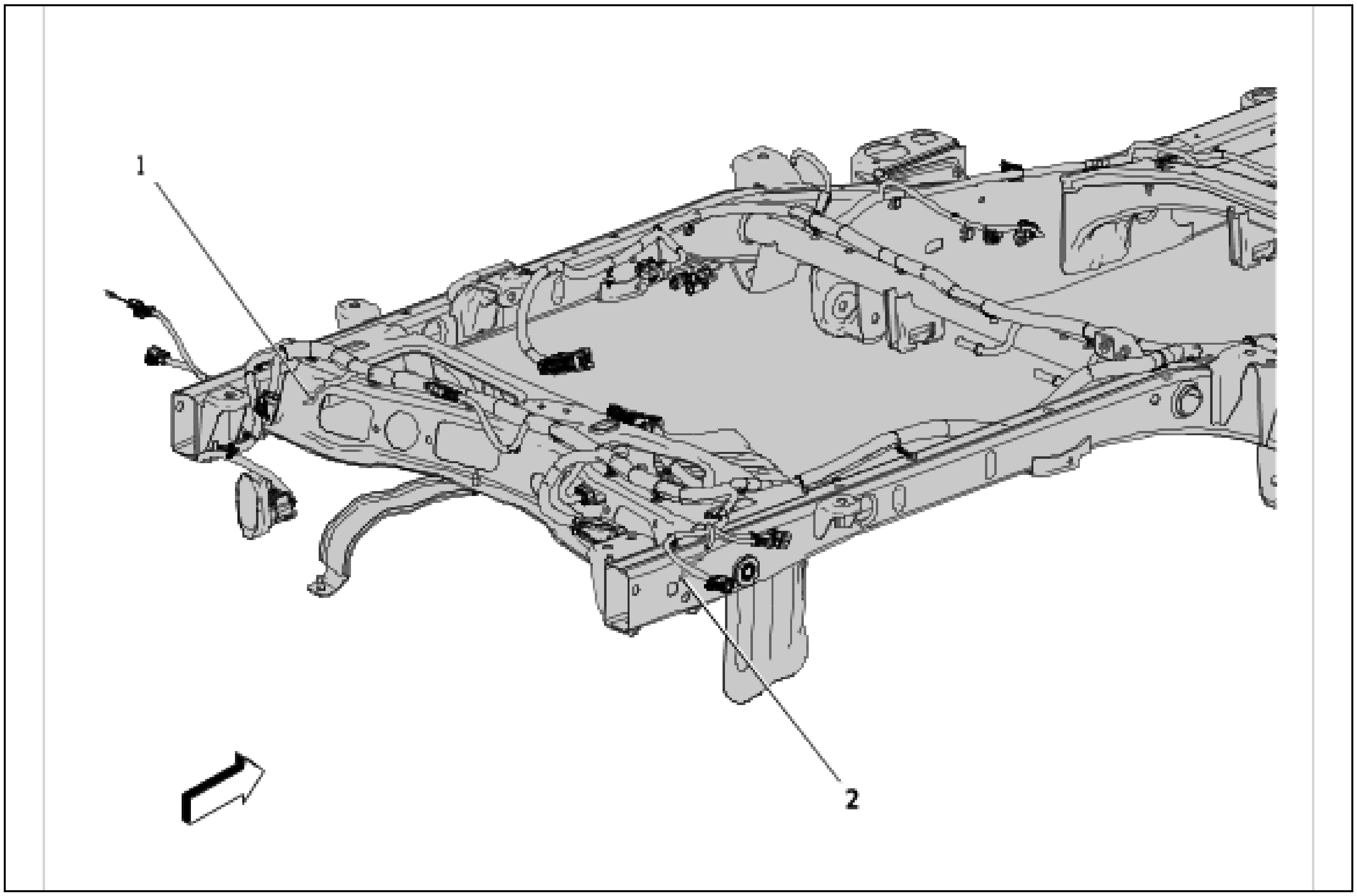
Items

(1) G305 Battery Negative Cable

(2) G304 Instrument Panel Wiring Harness

(3) G301C Body Wiring Harness

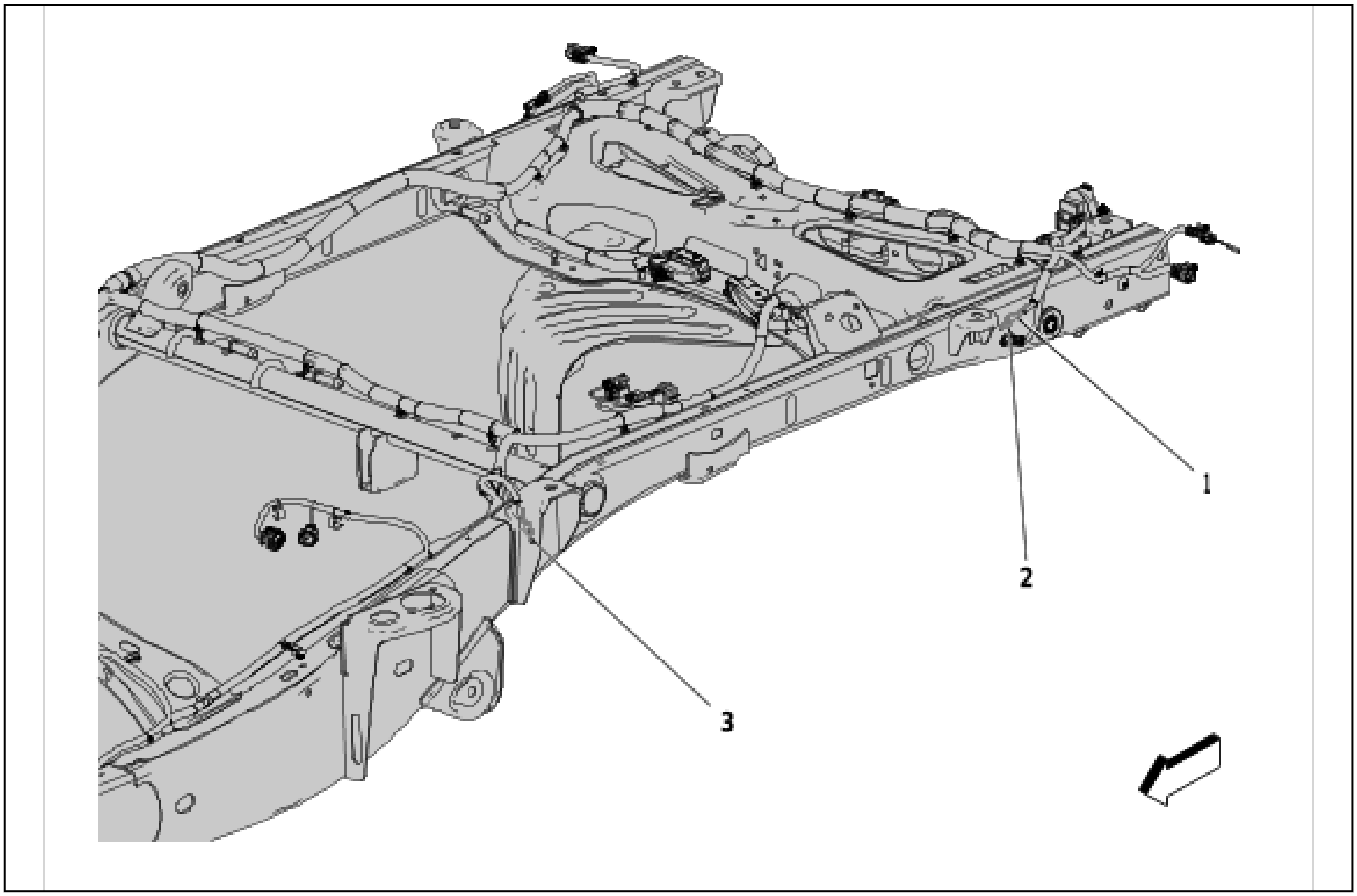
G401A and G401B



6178264

Items
(1) G401A Chassis Wiring Harness
(2) G401B Chassis Wiring Harness

G403, G405A, and G405B



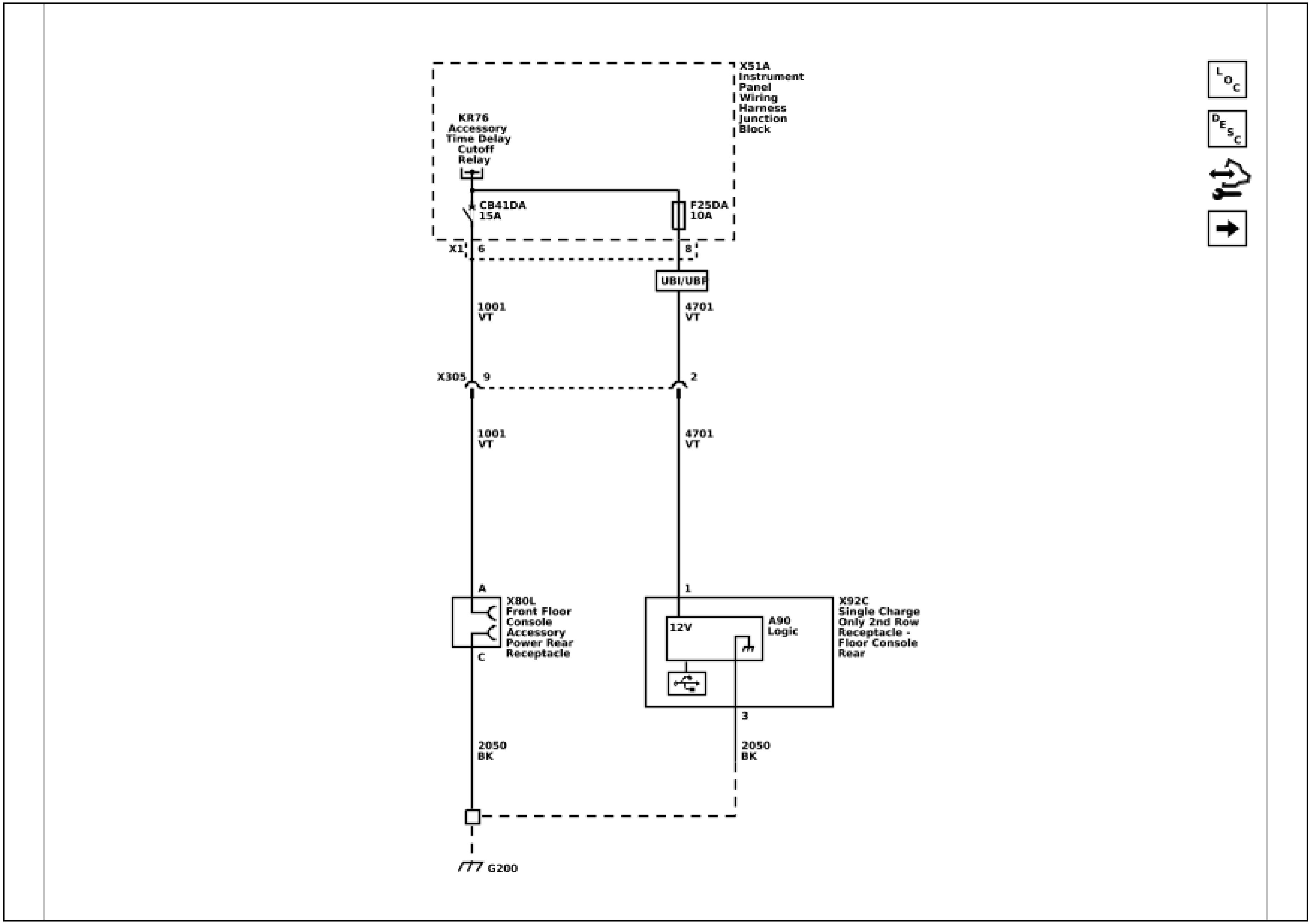
6178265

Items
(1) G405A Chassis Wiring Harness
(2) G405B Chassis Wiring Harness
(3) G403 Chassis Wiring Harness

Power Outlets

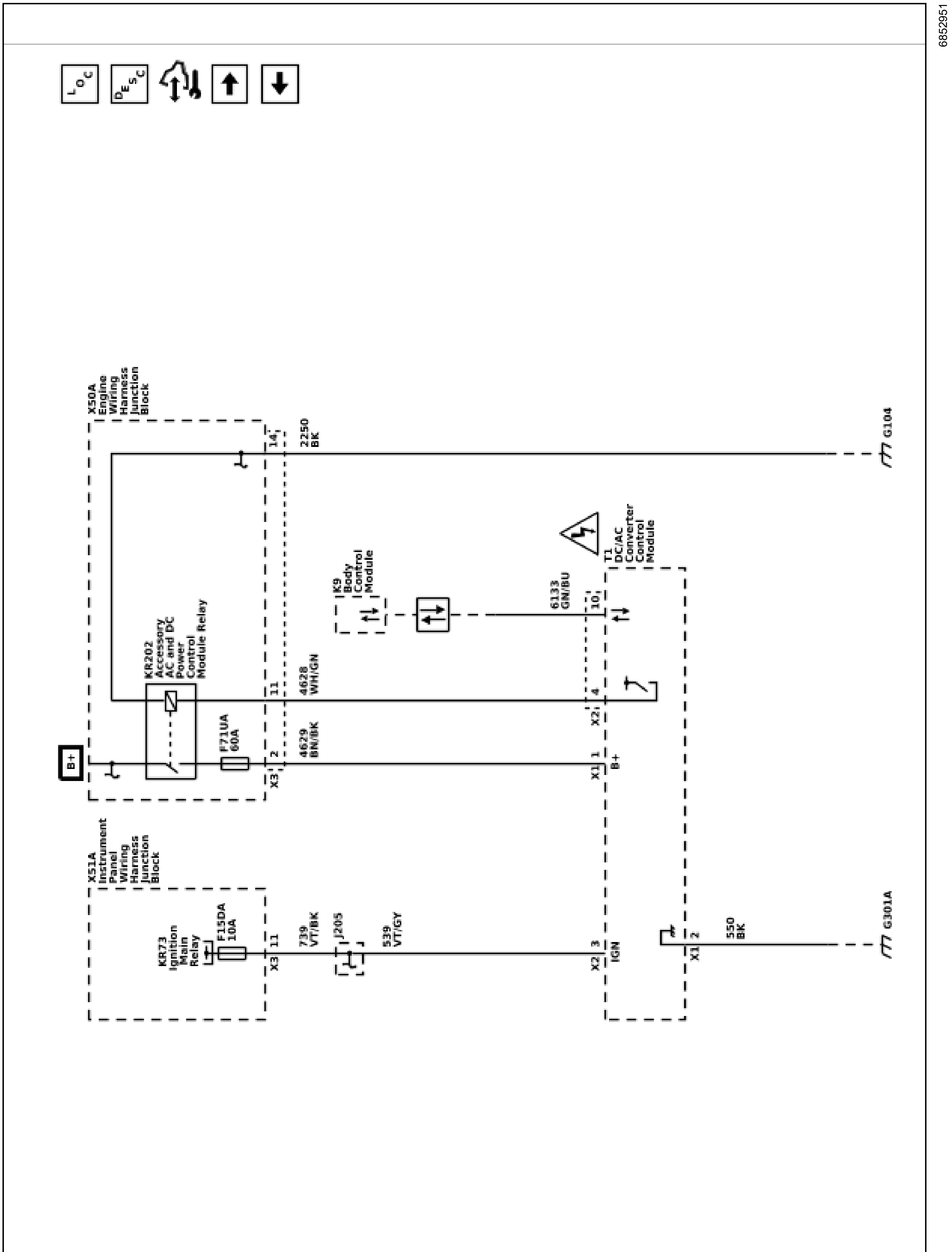
Schematic and Routing Diagrams

Cigar Lighter/Power Outlet Schematics (Power and Charge Receptacles)

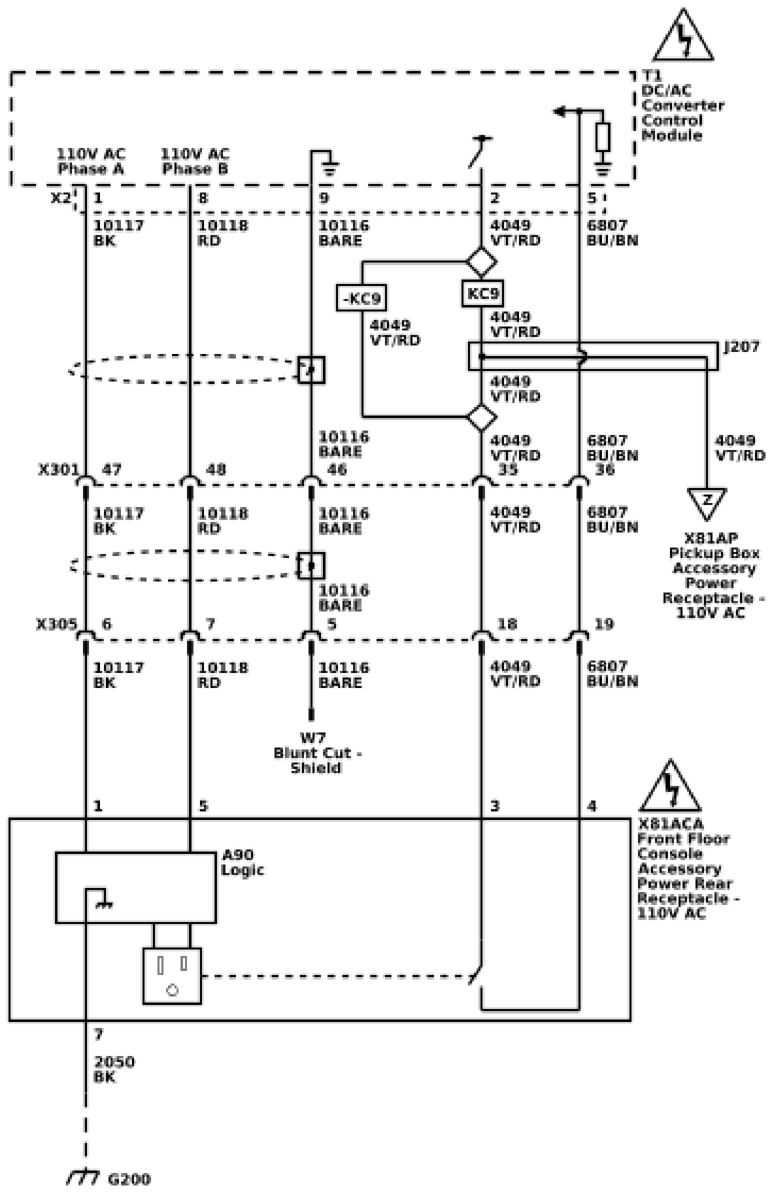

X51A
Instrument Panel Wiring Harness Junction Block
KR76
Accessory Time Delay Cutoff Relay
CB41DA
15A
F25DA
10A
X1
6
8
UBI/UBP
1001
VT
4701
VT
X305
9
2
1001
VT
4701
VT
A
1
X80L
Front Floor Console Accessory Power Rear Receptacle
C
12V
A90
Logic
X92C
Single Charge Only 2nd Row Receptacle - Floor Console Rear
3
2050
BK
2050
BK
G200

6852950

Cigar Lighter/Power Outlet Schematics (Inverter Module Power, Ground, and Serial Data (KI6 / KI7 / KCA / KC9))

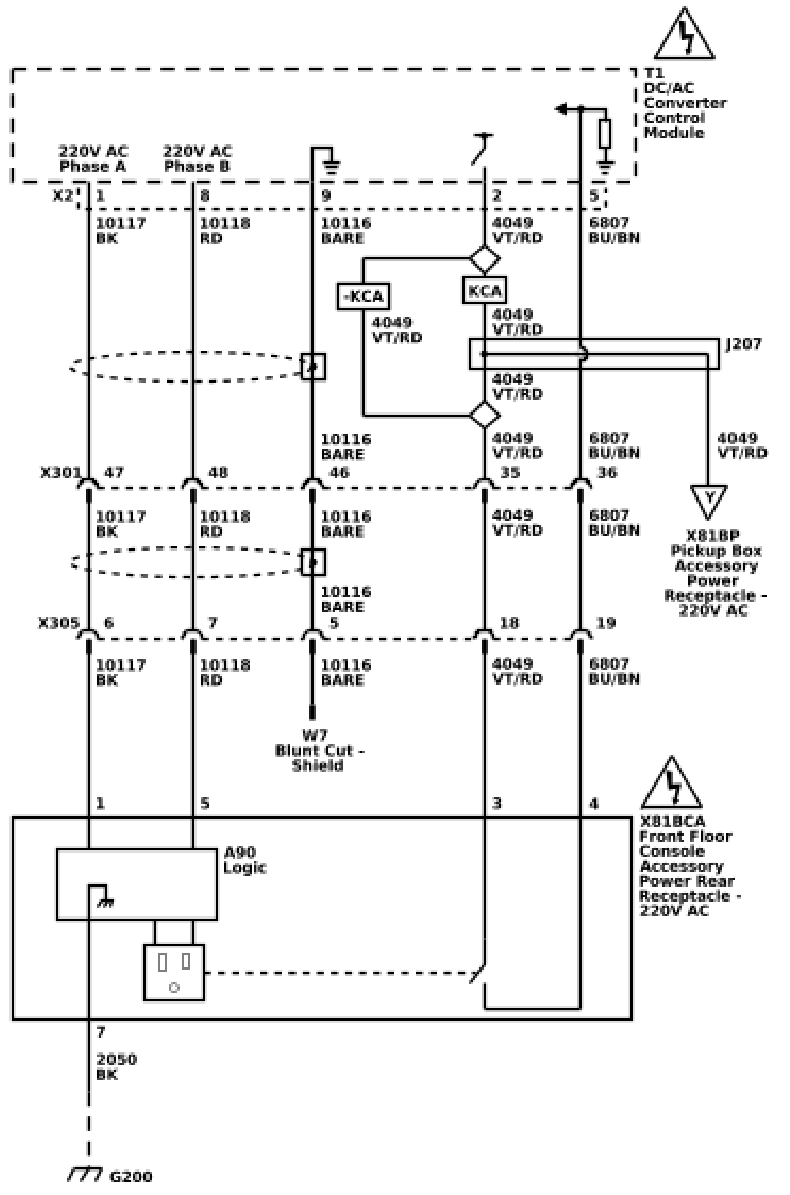

6852951
X50A Engine Wiring Harness Junction Block
14
2250 BK
G104
KR202 Accessory AC and DC Power Control Module Relay
11
4628 WH/GN
F71UA 60A
X3 2
4629 BN/BK
B+
K9 Body Control Module
6133 GN/BU
10
T1 DC/AC Converter Control Module
X2 4
X1 1 B+
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F15DA 10A
X3 11
739 VT/BK
J205
539 VT/GY
X2 3 IGN
X1 2
550 BK
G301A

Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Front Floor Console Rear Receptacle (KI6 / KC9))


T1
DC/AC
Converter
Control
Module
110V AC
Phase A
110V AC
Phase B
X2
1
8
9
2
5
10117
BK
10118
RD
10116
BARE
4049
VT/RD
6807
BU/BN
-KC9
KC9
J207
4049
VT/RD
Z
X81AP
Pickup Box
Accessory
Power
Receptacle -
110V AC
X301
47
48
46
35
36
X305
6
7
5
18
19
W7
Blunt Cut -
Shield
1
5
3
4
X81ACA
Front Floor
Console
Accessory
Power Rear
Receptacle -
110V AC
A90
Logic
7
2050
BK
G200

6852952

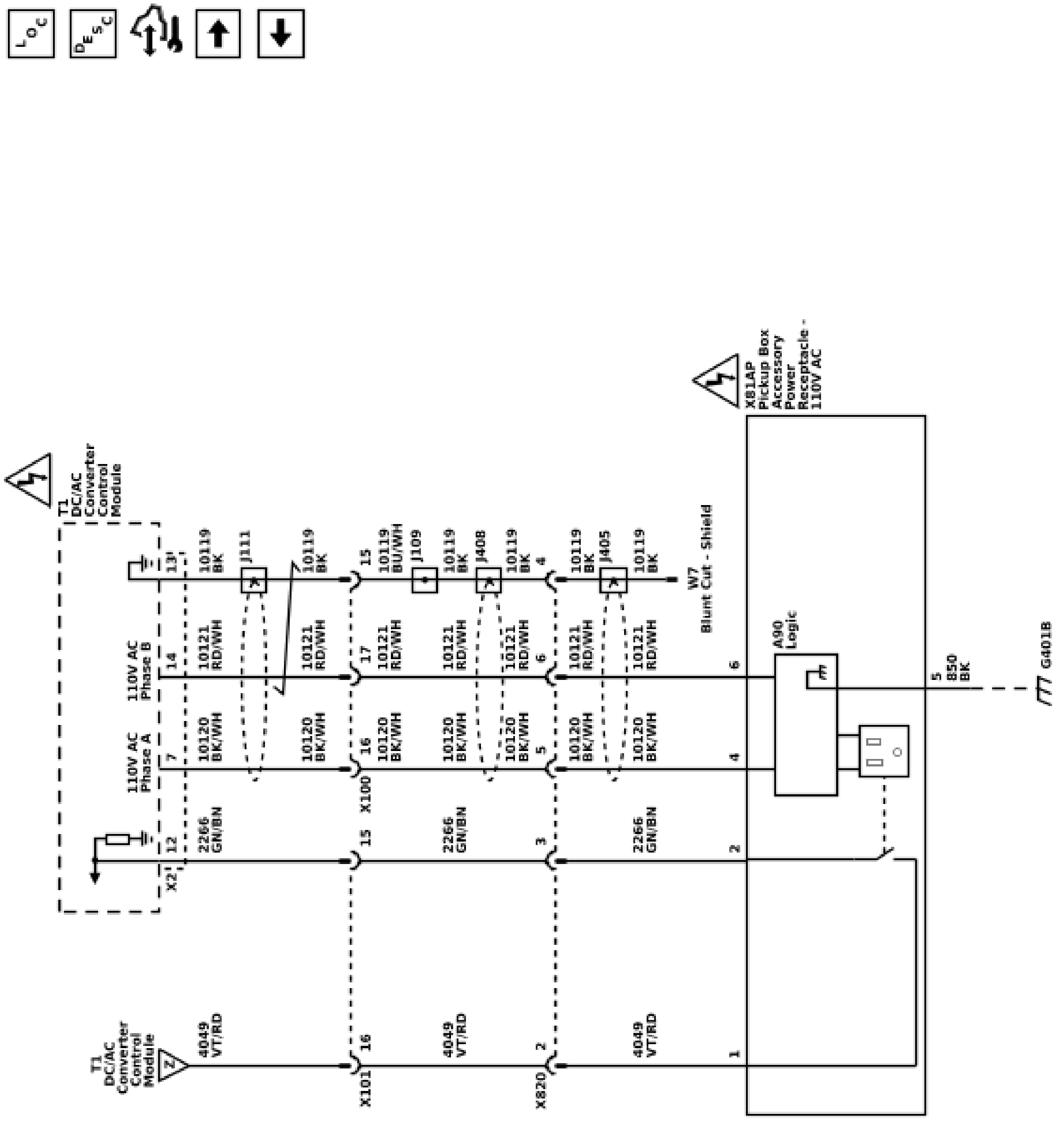
Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Front Floor Console Rear Receptacle (KI7 / KCA))


T1
DC/AC Converter Control Module
220V AC Phase A
220V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
-KCA
KCA
4049 VT/RD
J207
4049 VT/RD
X301
47
48
46
35
36
Y
X81BP Pickup Box Accessory Power Receptacle - 220V AC
X305
6
7
5
18
19
W7 Blunt Cut - Shield
1
5
3
4
A90 Logic
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
7
2050 BK
G200

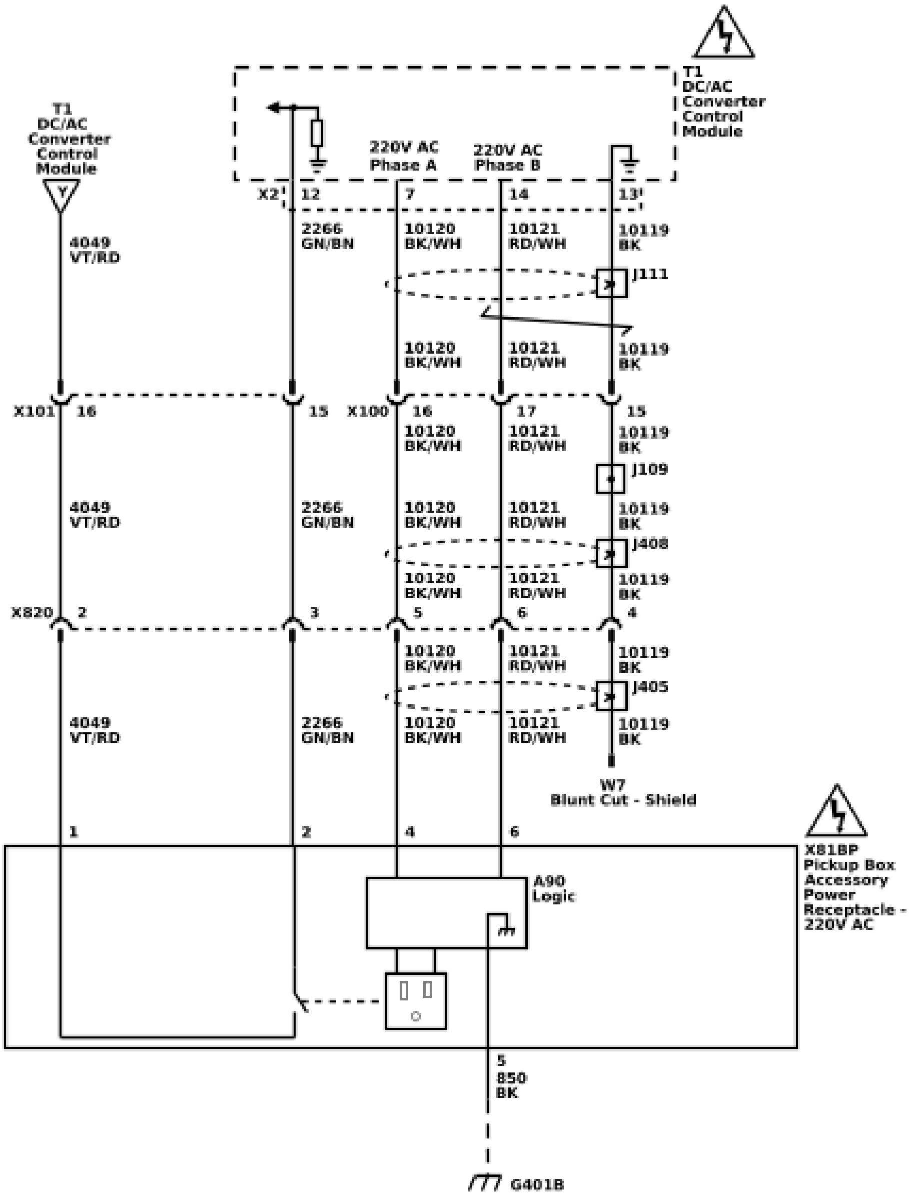
6852953

Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Pickup Box (KC9))

6852954


T1 DC/AC Converter Control Module
X2
12
7
14
13
110V AC Phase A
110V AC Phase B
2266 GN/BN
10120 BK/WH
10121 RD/WH
10119 BK
10119 BU/WH
J111
J109
J408
J405
X100
X101
X820
15
16
17
6
5
4
3
2
W7 Blunt Cut - Shield
4049 VT/RD
A90 Logic
X81AP Pickup Box Accessory Power Receptacle - 110V AC
1
B50 BK
G401B

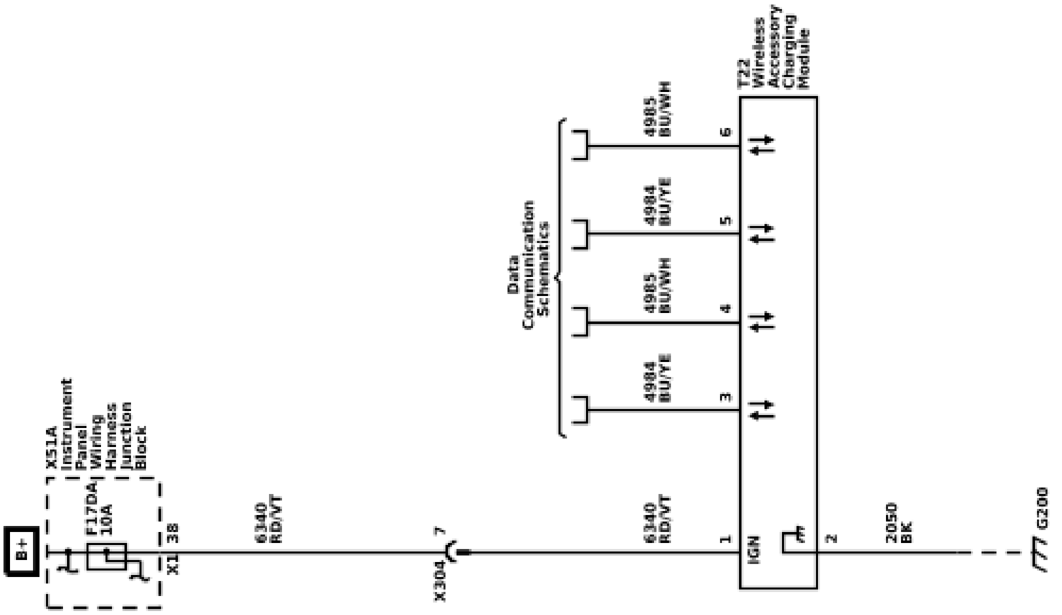
Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Pickup Box (KCA))


T1
DC/AC
Converter
Control
Module
220V AC
Phase A
220V AC
Phase B
X2
12
7
14
13
2266
GN/BN
10120
BK/WH
10121
RD/WH
10119
BK
J111
T1
DC/AC
Converter
Control
Module
4049
VT/RD
X101
16
15
X100
16
17
15
J109
J408
X820
2
3
5
6
4
J405
W7
Blunt Cut - Shield
1
2
4
6
A90
Logic
X81BP
Pickup Box
Accessory
Power
Receptacle -
220V AC
5
850
BK
G401B

6852955

Cigar Lighter/Power Outlet Schematics (Wireless Charging (K4C))

6852956


B+
X51A Instrument Panel Wiring Harness Junction Block
F17DA 10A
X1 38
6340 RD/VT
X304 7
6340 RD/VT
Data Communication Schematics
4984 BU/YE
4985 BU/WH
4984 BU/YE
4985 BU/WH
3
4
5
6
1
IGN
2
T22 Wireless Accessory Charging Module
2050 BK
G200

Description and Operation

Mobile Device Wireless Charger Description and Operation

Mobile Device Wireless Charging System

The Mobile Device Wireless Charging System (WCS) is an system for wirelessly charging mobile devices. It is capable of charging the batteries of compatible mobile devices. A compatible device is one that is compliant with Power Matters Alliance (PMA), Wireless Power Consortium (WPC) Standard, or Alliance for Wireless Power (A4WP), meaning that it is equipped with a PMA, WPC, or A4WP wireless charge “receiver” that will work with the charge “transmitter” installed in the vehicle. The devices may utilize built-in charging circuitry or an adapter (external plug-in device which contains the charging circuitry). To check for phone or other device compatibility, refer to GM Total Connect.

Warning: Remove all objects from the charging pad before charging your mobile device. Objects, such as coins, keys, rings, paper clips, or cards, between the phone and charging pad will become very hot. On the rare occasion that the charging system does not detect an object, and the object gets wedged between the phone and charger, remove the phone and allow the object to cool before removing it from the charging pad, to prevent burns.

Charging

To charge a device, place it on the charging surface in the vehicle. There is a charging coil located in the center of the charging surface. The device has a charging coil typically near the center of the device. These coils must be lined up in order for charging to proceed. When the interruptible retained accessory power (IRAP) relay is closed (this is true typically when vehicle ignition is in Run or Accessory position), the WCS will detect the device, establish communications with the device to confirm it is a compatible device, and then deliver charging power to the device via wireless interface. The WCS will be able to deliver 5W to 15W of power as requested by the compatible device. It shall only enter a charging state if communication is established and a compatible device is identified.

The WCS shall not enter a charging state if there is no communication established with a compatible device. Due to differences in objects, a foreign object detection protocol is employed to detect a non-compliant device and hold power transfer initiation until the non-compliant object has been removed and a compliant object has been detected. The charger monitors its internal temperature and will shut down if the charger temperature exceeds 185F (85C).

Indicator

The K9 Body Control Module will detect the device battery is charging and send a serial data message on the GMLAN bus to the radio display. The radio display will indicate a device is currently charging by displaying a lightning bolt over the phone icon. When the indicator is toggling on and off this indicates a thermal limit has been reached and the device will not charge. For more information refer to the owners manual.

Cooling

The Wireless Charge modules (WCM) have a fan on the bottom of the module. When the WCM charges, it simply pulls or pushes air from the phone, through the vents in the rubber liner, over the module, and down into the center console.

Power Outlets Description and Operation

12 Volt Power Outlet Receptacle Description and Operation

The 12 V accessory power receptacles are supplied with power by the accessory relay.

The vehicle is fitted with a cigarette lighter and/or with a 12 V accessory power receptacle. The cigarette lighter and accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle and cigarette lighter are operational when the ignition is turned to either the On or the Accessories positions. To operate the cigarette lighter, press in the lighter knob. When the element is hot, the lighter automatically pops out and is ready for use.

110 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 110 V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 110 V at 60 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 110 V AC provides the usual connection for AC powered devices.

110 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 110 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 110 V AC, the normally open switch in the accessory power receptacle – 110 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 110 V AC switch, the inverter module begins to supply 110 V AC to the accessory power receptacle – 110 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

110 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 110 V circuit for a short to vehicle chassis ground. If a 110 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Overload Shutdown

The accessory DC/AC power inverter module will turn OFF if the current in the 110 V circuit is greater than 3.8 A for 1 s , or 2.5 A for 10 s . The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the outlet, and then plugged into the outlet.

230 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 220V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 220–230 V at 50 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 220V AC provides the usual connection for AC powered devices.

230 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 220V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 220V AC, the normally open switch in the accessory power receptacle – 220V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 220V AC switch, the inverter module begins to supply 220–230 V AC to the accessory power receptacle – 220V AC after a 1.5 second delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

230 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 230 V circuit for a short to vehicle chassis ground. If a 230 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

230 Volt Power Outlet Receptacle Overload Shutdown

The accessory AC/DC power control module will turn OFF if the current in the 230 V circuit is greater than 3.8 A for 1 second, or 2.5 A for 10 seconds. The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 second delay.

230 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the accessory power receptacle – 220V AC, and then plugged into the accessory power receptacle – 220V AC.

USB Receptacle Description and Operation (USS)

The vehicle is fitted with USB charge port receptacles. These USB receptacles are for charging devices only. The USB receptacles are controlled by an ignition operated relay and are operational when the ignition is turned to either the On or the Accessories positions.

Wiring Systems and Power Management

Schematic and Routing Diagrams

How to Use Electrical Schematics

Information Overview

The following explains some of the key parts of the GM wiring diagrams. Included are:

- Color Abbreviations
- Electronic Delivery Navigation Features

Color Abbreviations

The following sequence is used when depicting wire colors:

1. Color modifier of the wire, such as light or dark (if applicable)
2. Primary color of the wire
3. Secondary color of the wire (tracer/stripe)

Wire insulation and connector body colors in schematic information are abbreviated with a two character code as listed below.

Abbreviation	Color	Abbreviation	Color
AM	Amber	OG	Orange
BARE	Bare	PK	Pink
BG	Beige	PU	Purple
BK	Black	RD	Red
BN	Brown	RU	Rust
BU	Blue	SR	Silver
CL	Clear	TL	Teal
CR	Cream	TN	Tan
CU	Curry	TQ	Turquoise
GD	Gold	VT	Violet
GN	Green	WH	White
GY	Gray	YE	Yellow
NA	Natural	—	—
Color Modifiers			
L	Light	D	Dark

Additionally, industry standard cable types are not identified by color, but are listed by cable type as follows:

Abbreviation	Cable Type
COAX	Coax Cable
ENET	Ethernet
FW	Flat Wire
HDMI	High Definition Multimedia Interface
LVDS	Low-voltage Differential Signaling
TWINAX	Twinax Cable
USB	Universal Serial Bus

Electronic Delivery Navigation Features

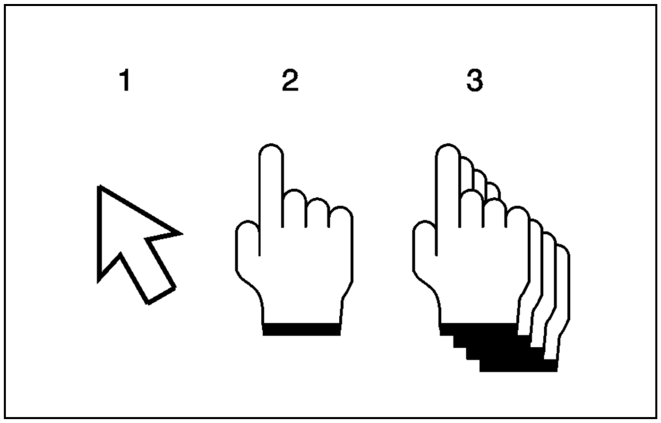
The schematics information has been enhanced for electronic delivery and the following explains the features that are now available.

The enhanced features are categorized into three types:

- Mouse-overs, which are active when the mouse pointer is placed over the activated area

- Hotspots (links to other information), which are active by placing the mouse pointer over the activated area and clicking the left mouse button
- Hotspot Target Highlighting, which is when linking from one graphic to another graphic, the point of interest will be highlighted in red. This feature is available only when linking from a schematic graphic to a component locator/harness routing view, or when linking from a schematic to an electrical center identification view

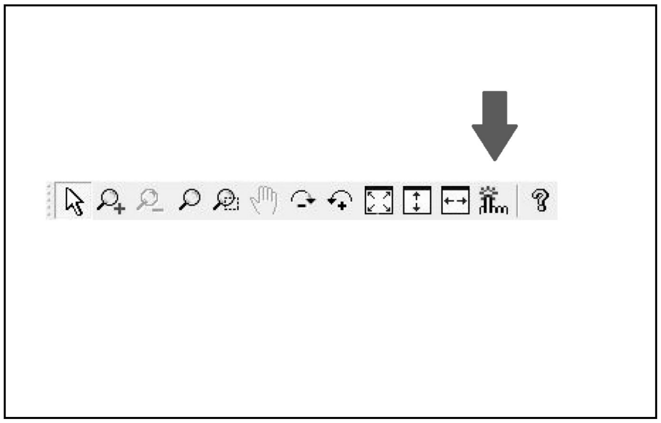
Depending on the amount of information that is linked to from a hotspot, the mouse pointer changes shape.



3819127

1. Basic mouse pointer – this means there are no hotspots available, but there may be a mouse-over available.
2. Single hand pointer – this means there is a mouse-over and hotspot link to a single document. Clicking on these areas will automatically take you to the target link.
3. Multiple hand pointer – this means there is a mouse-over and hotspot link to a multiple document. Clicking on these areas will bring up a pop-up menu that will display all available links. You may then select one of the available links clicking on one of the displayed links.

To see which areas of the schematic information have an available hotspot and/or a mouse-over, select and hold down the highlight hotspots button of the cgm viewer. This will highlight all areas of the graphic that have an available hotspot and/or a mouse-over in red. Once the button is released, the areas of the graphic will no longer be highlighted.



3819130

Each type of schematic related information has some level of these features. The schematic related information consists of the following information types:

- Schematics
- Connector End Views
- Component Locator Views
- Harness Routing Views
- Electrical Center Identification Views
- Master Electrical Component List
- Master Electrical Schematic Icons
- Schematics RPO Code List
- Circuit Number/Wire Colors
- Wire Lines
- Connector Cavities

Schematics

An electrical schematic hotspot is an activated icon or area in the schematic that can be cursor selected to link to additional information. Additionally, each of the hotspots in schematics has a mouse-over.

Hotspots in schematics are categorized into three types:

- Schematic Navigational Icon Hotspots
- Schematic Informational Icon Hotspots
- Schematic Navigational Hotspots

Schematic Navigational Icon Hotspots

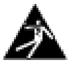
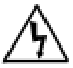
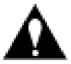
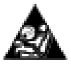
The following lists icons that may appear on the upper right corner of a schematic that have an available mouse-over and hotspot.

Icon	Mouse-Over	Hotspot Link to Information
LOC 1990537	Master Electrical Component List	Links to the vehicle Master Electrical Component List that shows all electrical components and harness items on the vehicle and has links to any available views
DESC 1990538	Title of the subsystem description and operation	Links to the System Description and Operation
⇄ 1988674	Control Module References	Links to the Control Module References table

Icon	Mouse-Over	Hotspot Link to Information
➡ 1990541	Title of the next schematic page	Links to the next schematic of the subsystem schematics
⬅ 1990542	Title of the previous schematic page	Links to the previous schematic of the subsystem schematics

Schematic Informational Icon Hotspots

The following lists the icons that may appear anywhere on a schematic that have an available mouse-over and hotspot.

Icon	Mouse-Over	Hotspot Link to Information
Danger  1988672	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
High Voltage  1988673	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Caution  1990543	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Supplemental Restraint  1988667	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.

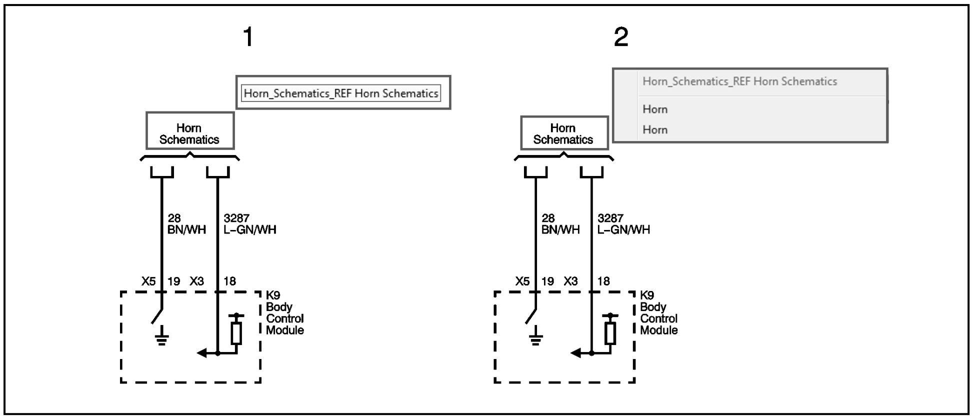
Icon	Mouse-Over	Hotspot Link to Information
Pedestrian Impact 3814889	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Additional Information 1988670	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.

Schematic Navigational Hotspots

In addition to the navigational icons, schematics have other active hotspots that link to supporting information such as related schematics, component locator views, harness routing views, and connector end views.

These hotspots can be either text based or symbol based. The following are the items that will have a mouse-over and hotspot.

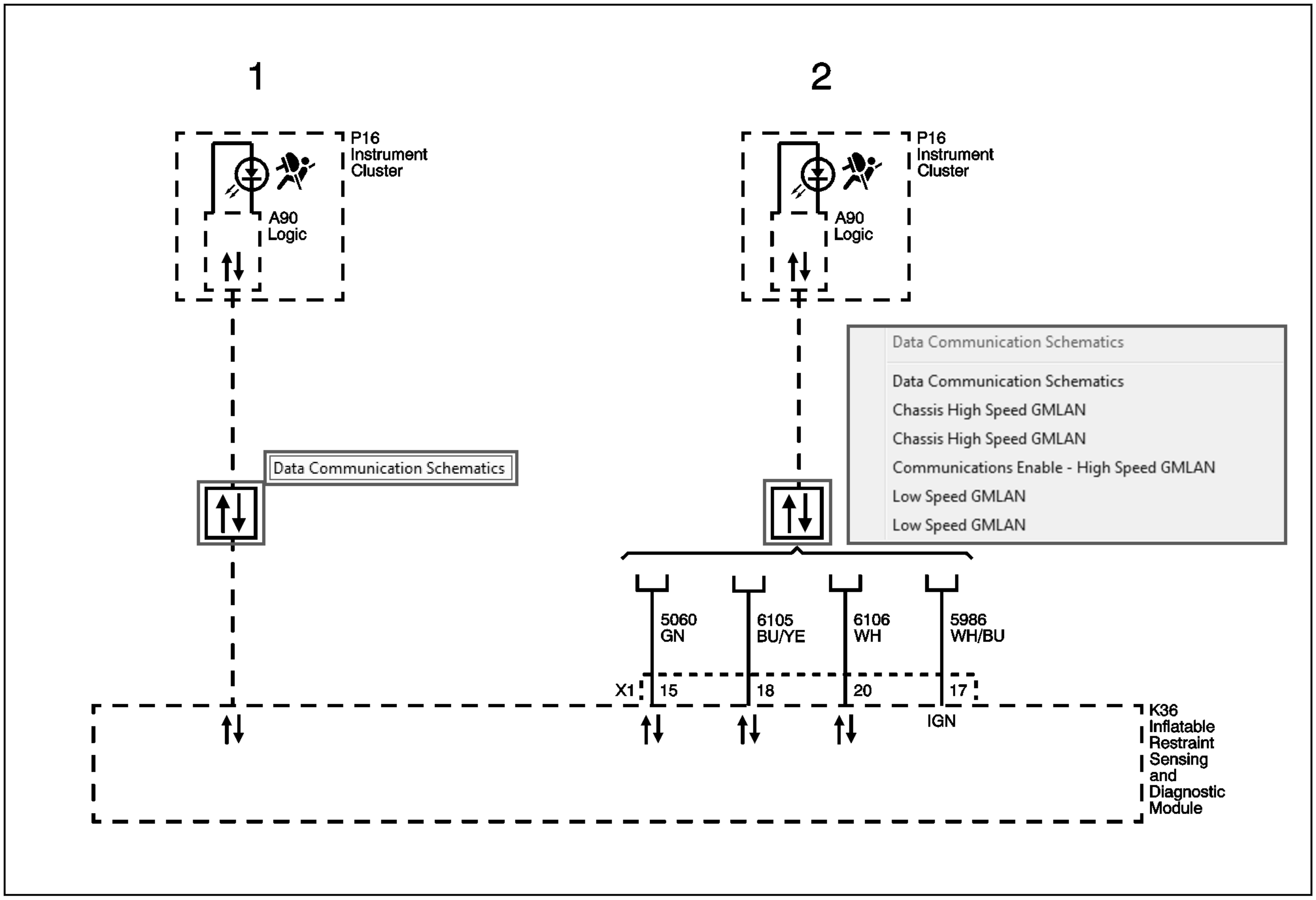
Schematic Title Circuit References


1
Horn_Schematics_REF Horn Schematics
Horn Schematics
28 BN/WH
3287 L–GN/WH
X5 19 X3 18
K9 Body Control Module
2
Horn_Schematics_REF Horn Schematics
Horn
Horn
Horn Schematics
28 BN/WH
3287 L–GN/WH
X5 19 X3 18
K9 Body Control Module

3814891

1. **Mouse-over:** Displays the title of the schematic page linked to.
2. **Hotspot Link to Information:** Links to the individual subsystem schematic page(s) that shows the circuit in detail. If multiple circuits are included, or if the circuit is shown in multiple schematics, a menu will appear when the link is selected. This menu includes links to all schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

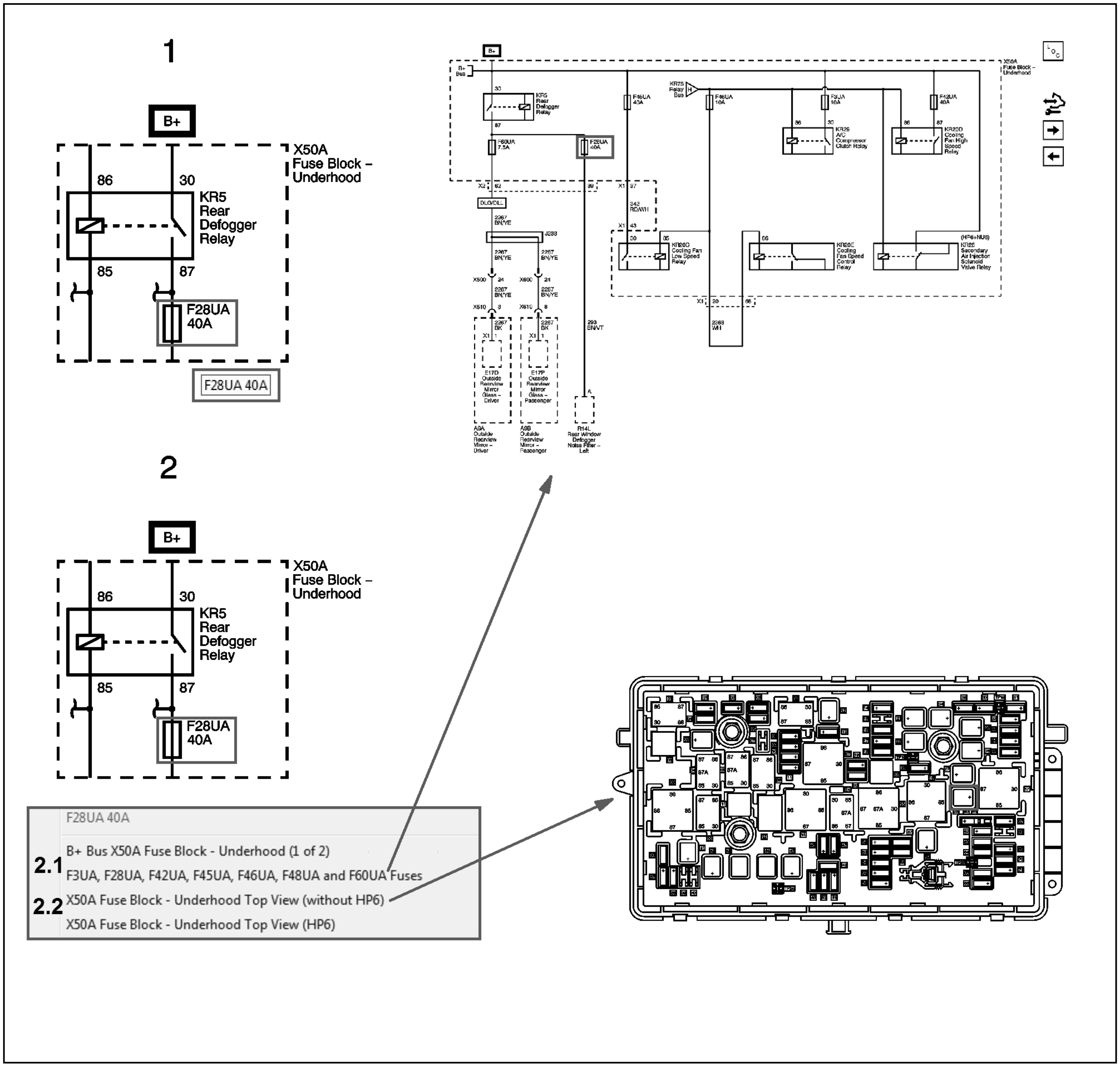
Serial Data Functional Circuit Icon


1
2
P16
Instrument
Cluster
A90
Logic
Data Communication Schematics
Data Communication Schematics
Data Communication Schematics
Chassis High Speed GMLAN
Chassis High Speed GMLAN
Communications Enable - High Speed GMLAN
Low Speed GMLAN
Low Speed GMLAN
5060
GN
6105
BU/YE
6106
WH
5986
WH/BU
X1
15
18
20
17
IGN
K36
Inflatable
Restraint
Sensing
and
Diagnostic
Module

3818612

1. **Mouse-over:** Displays the schematic title Data Communication Schematics.
2. **Hotspot Link to Information:**
   - ⇒ When a dashed serial data wire and icon are shown without any circuit numbers, the serial data circuit icon will link to the complete list of Data Communication schematic pages, and not a specific schematic. This is due to no circuit numbers are shown.
   - ⇒ When a circuit wire(s) are shown with circuit numbers, a menu will appear when the link is selected. This menu includes links to the list of Data Communication schematic pages as well as links to the individual schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

Fuse/Circuit Breaker Symbol and Name within Subsystem Schematics


1
B+
X50A
Fuse Block – Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
F28UA 40A
2
B+
X50A
Fuse Block – Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
F28UA 40A
2.1
2.2
B+ Bus X50A Fuse Block - Underhood (1 of 2)
F3UA, F28UA, F42UA, F45UA, F46UA, F48UA and F60UA Fuses
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

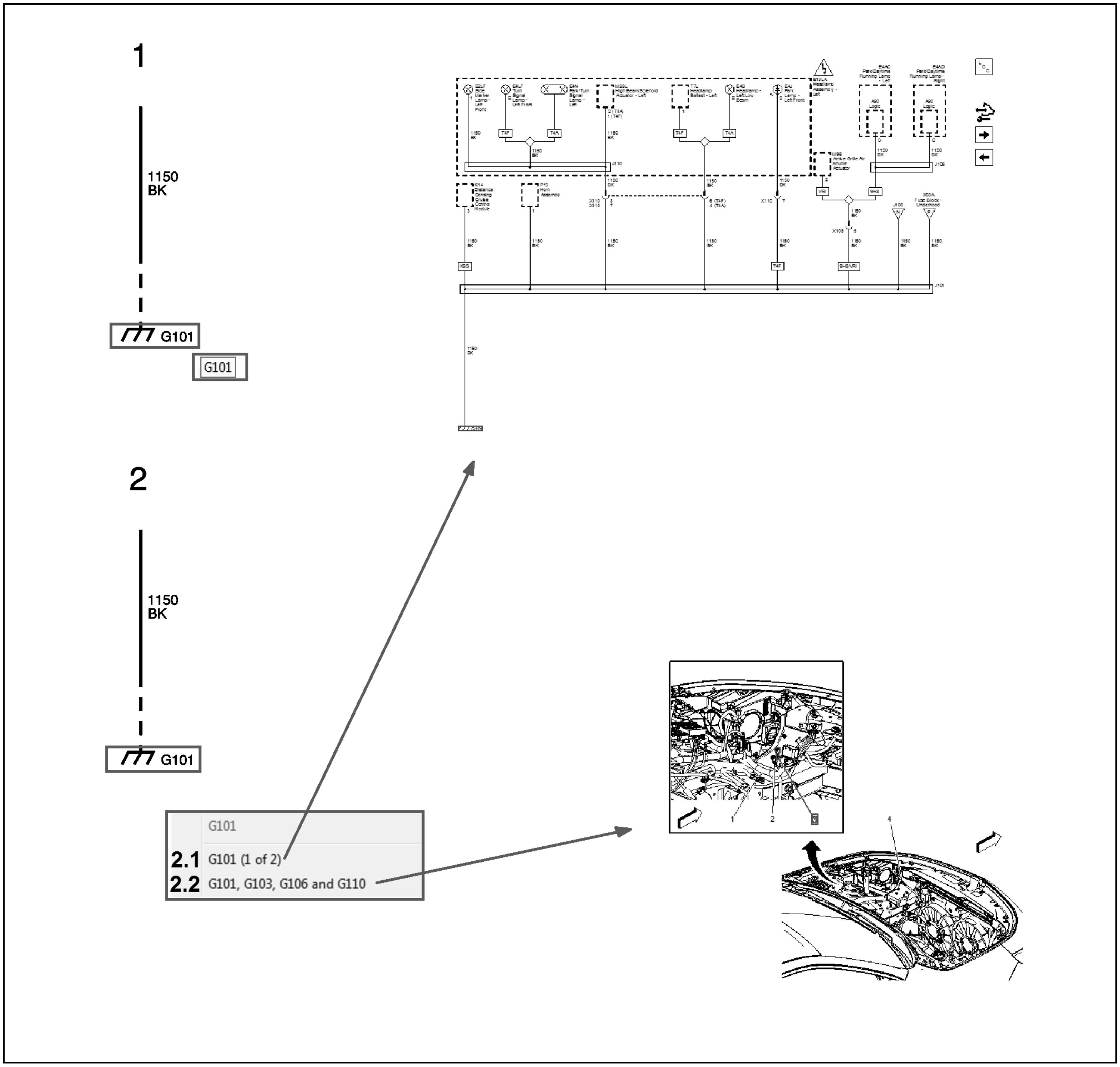
3818725

1. **Mouse-over:** Displays the code and the amperage of the protection device.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.

2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

Ground Symbol/Name in Subsystem Schematics



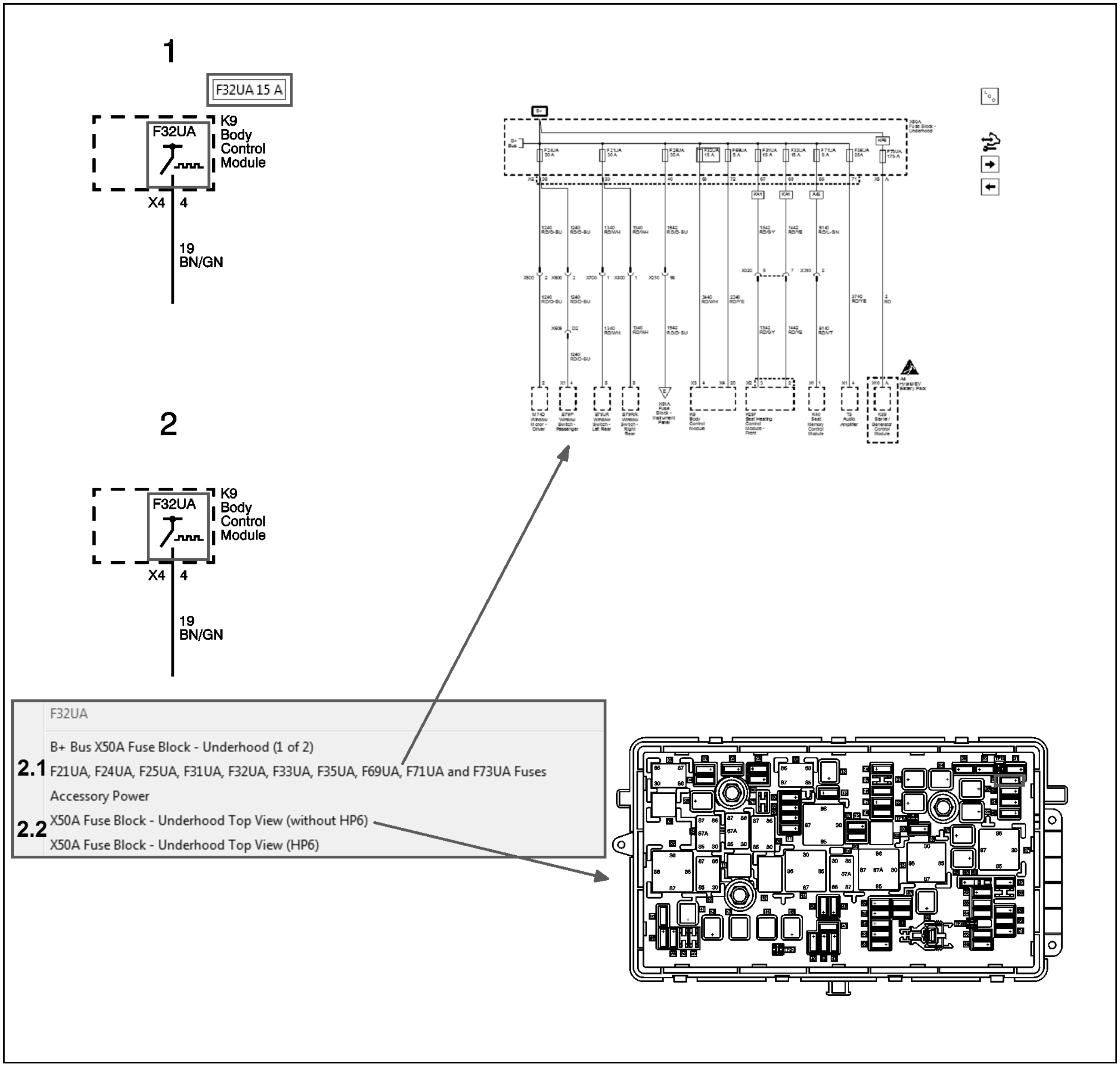
3818918

1. **Mouse-over:** Displays the ground number.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual schematic page(s) within the Ground Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the ground will be highlighted to draw visual attention.

   2.2. Links to the individual locator view(s) within the Ground Views and will show where the ground is located on the vehicle. Additionally, when the target view is opened, the ground and callout leader line/number will be highlighted to draw visual attention.

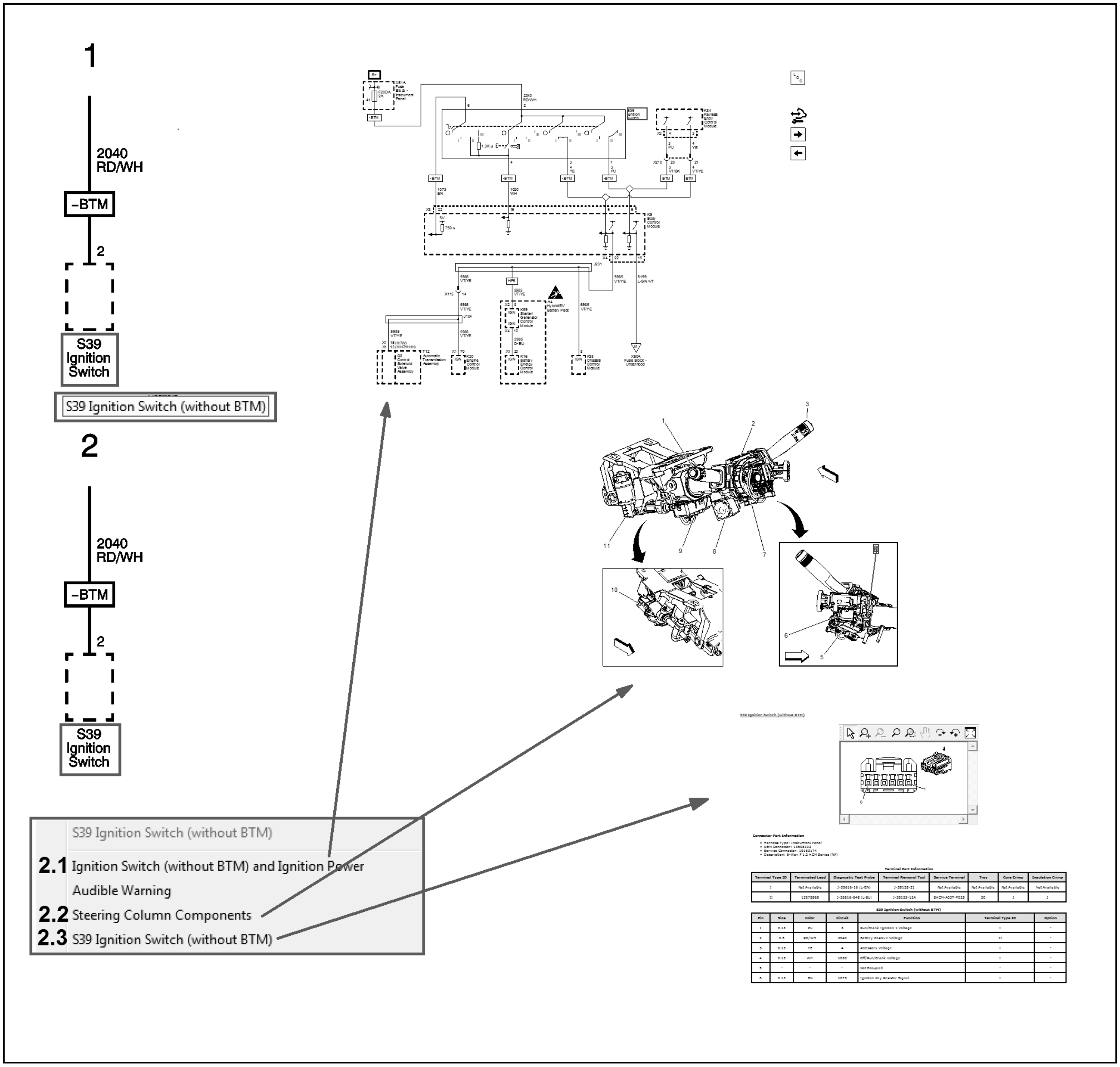
Body Control Module High-Side Driver Output Symbol/Driver Source Fuse Name in Subsystem Schematics


1
F32UA 15 A
F32UA
K9
Body
Control
Module
X4
4
19
BN/GN
2
F32UA
K9
Body
Control
Module
X4
4
19
BN/GN
F32UA
B+ Bus X50A Fuse Block - Underhood (1 of 2)
2.1
F21UA, F24UA, F25UA, F31UA, F32UA, F33UA, F35UA, F69UA, F71UA and F73UA Fuses
Accessory Power
2.2
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

3819026

1. **Mouse-over:** Displays the code of the protection device that supplies the high-side driver output circuit.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   - 2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.
   - 2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

Component Name in Power and Ground Distribution Schematics


1
2040
RD/WH
–BTM
2
S39
Ignition
Switch
S39 Ignition Switch (without BTM)
2
2040
RD/WH
–BTM
2
S39
Ignition
Switch
S39 Ignition Switch (without BTM)
2.1 Ignition Switch (without BTM) and Ignition Power
Audible Warning
2.2 Steering Column Components
2.3 S39 Ignition Switch (without BTM)

3819063

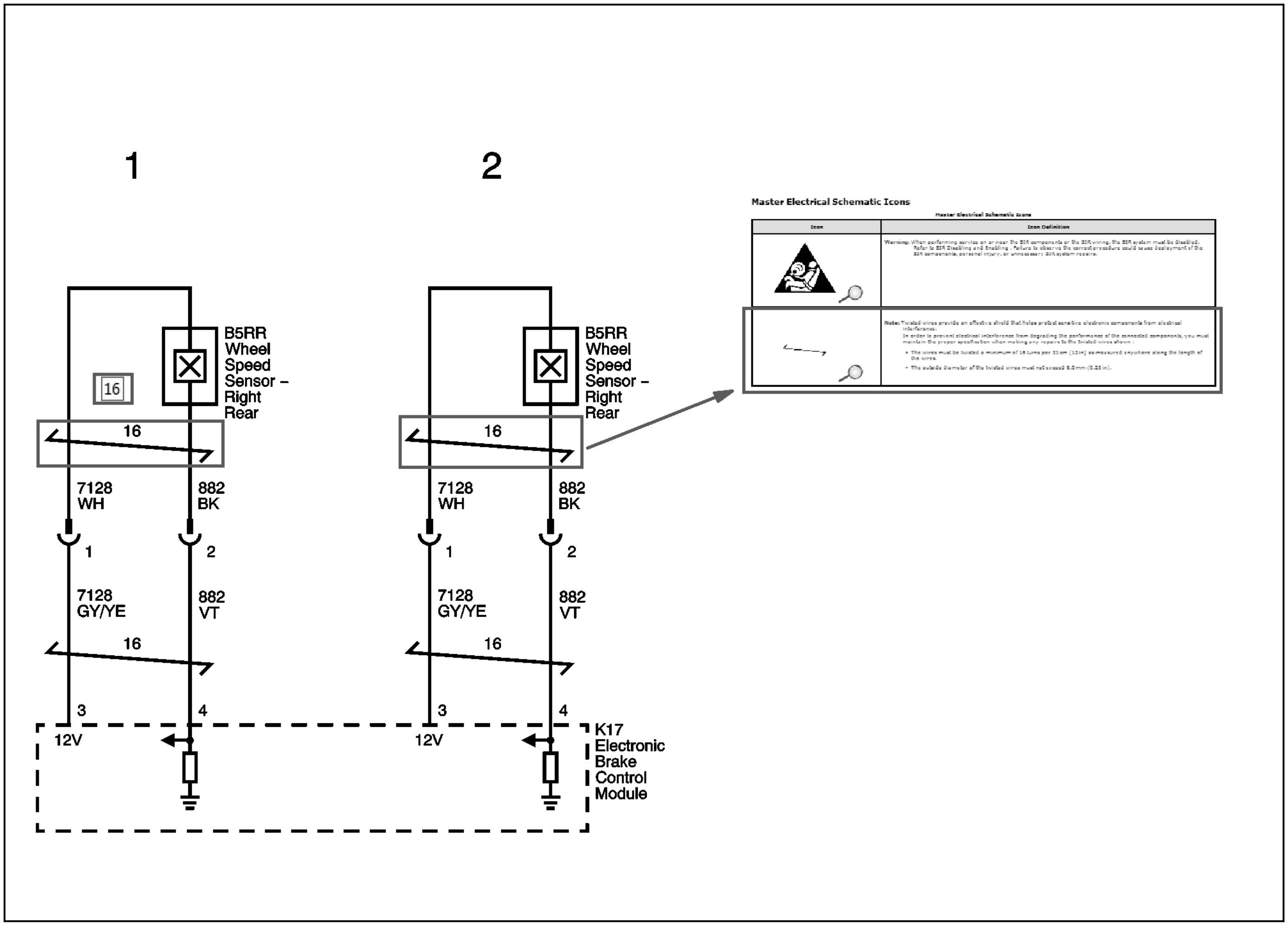
1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual schematic page(s) within the Subsystem Schematic(s) where the circuits are shown in detail. Additionally, when the target schematic is opened, the component code and name will be highlighted to draw visual attention.

2.2. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

2.3. Links to individual connector end view(s) within the Component Connector End Views.

Twisted Pair Symbols


1
2
16
B5RR Wheel Speed Sensor – Right Rear
16
7128 WH
882 BK
1
2
7128 GY/YE
882 VT
16
3
4
12V
K17 Electronic Brake Control Module

Master Electrical Schematic Icons

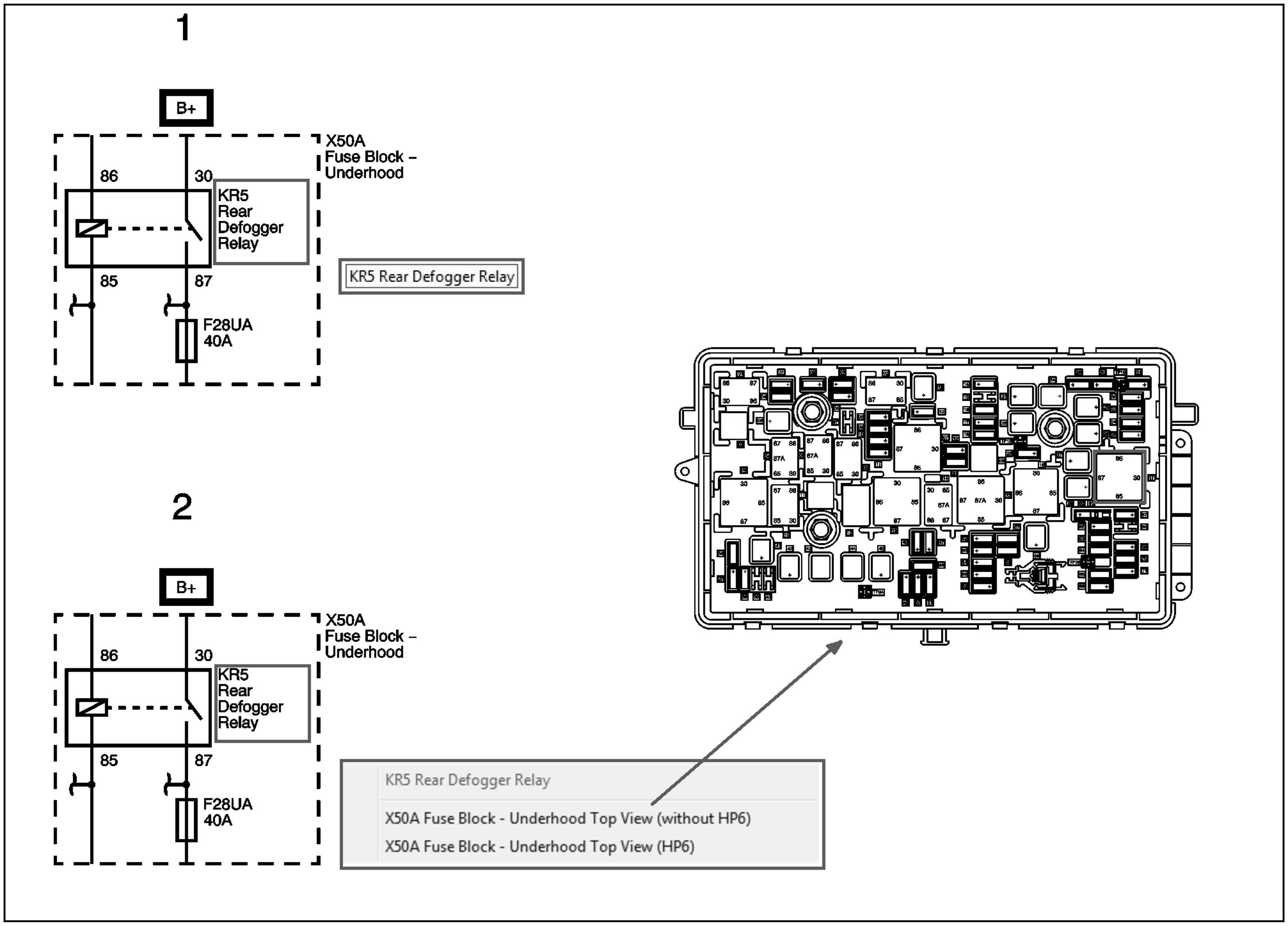
Master Electrical Schematic Icons

Icon	Icon Definition
	Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.
	Note: Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference. In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown : • The wires must be twisted a minimum of 16 turns per 31cm (12in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0mm (0.25 in).

3819064

1. **Mouse-over:** Displays the repair specification for the number of twists of the wire within the specified distance.
2. **Hotspot Link to Information:** Links to the Master Electrical Schematic Icons list that shows the icon along with the repair specification details for the wire.

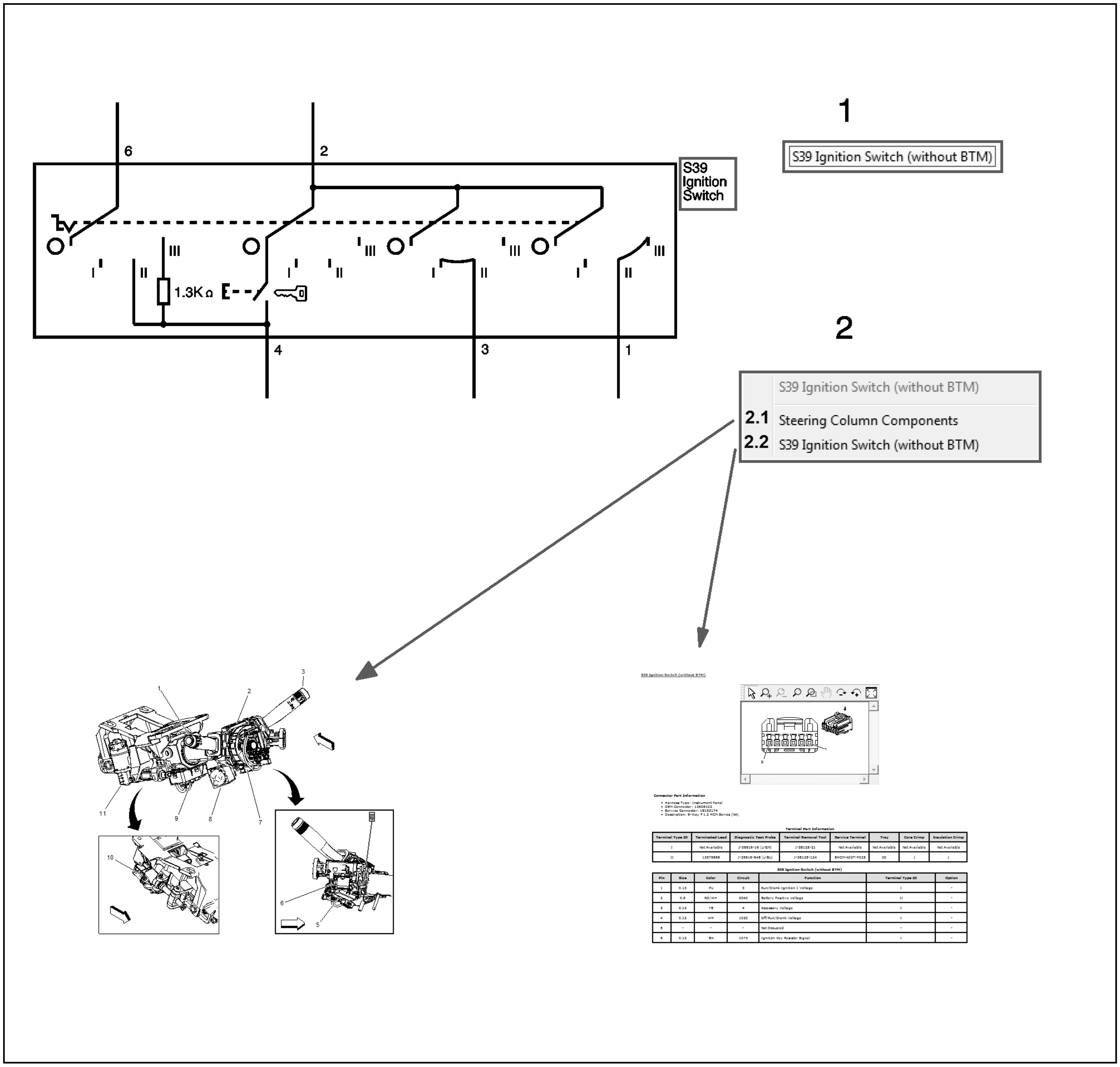
Relay Name (located within a block)


1
B+
X50A
Fuse Block –
Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
KR5 Rear Defogger Relay
2
B+
X50A
Fuse Block –
Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
KR5 Rear Defogger Relay
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

3819124

1. **Mouse-over:** Displays the relay code and name.
2. **Hotspot Link to Information:** Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

Component Name in Subsystem Schematics


6
2
S39 Ignition Switch
III
II
I
1.3KΩ
4
3
1
S39 Ignition Switch (without BTM)
2
S39 Ignition Switch (without BTM)
2.1 Steering Column Components
2.2 S39 Ignition Switch (without BTM)

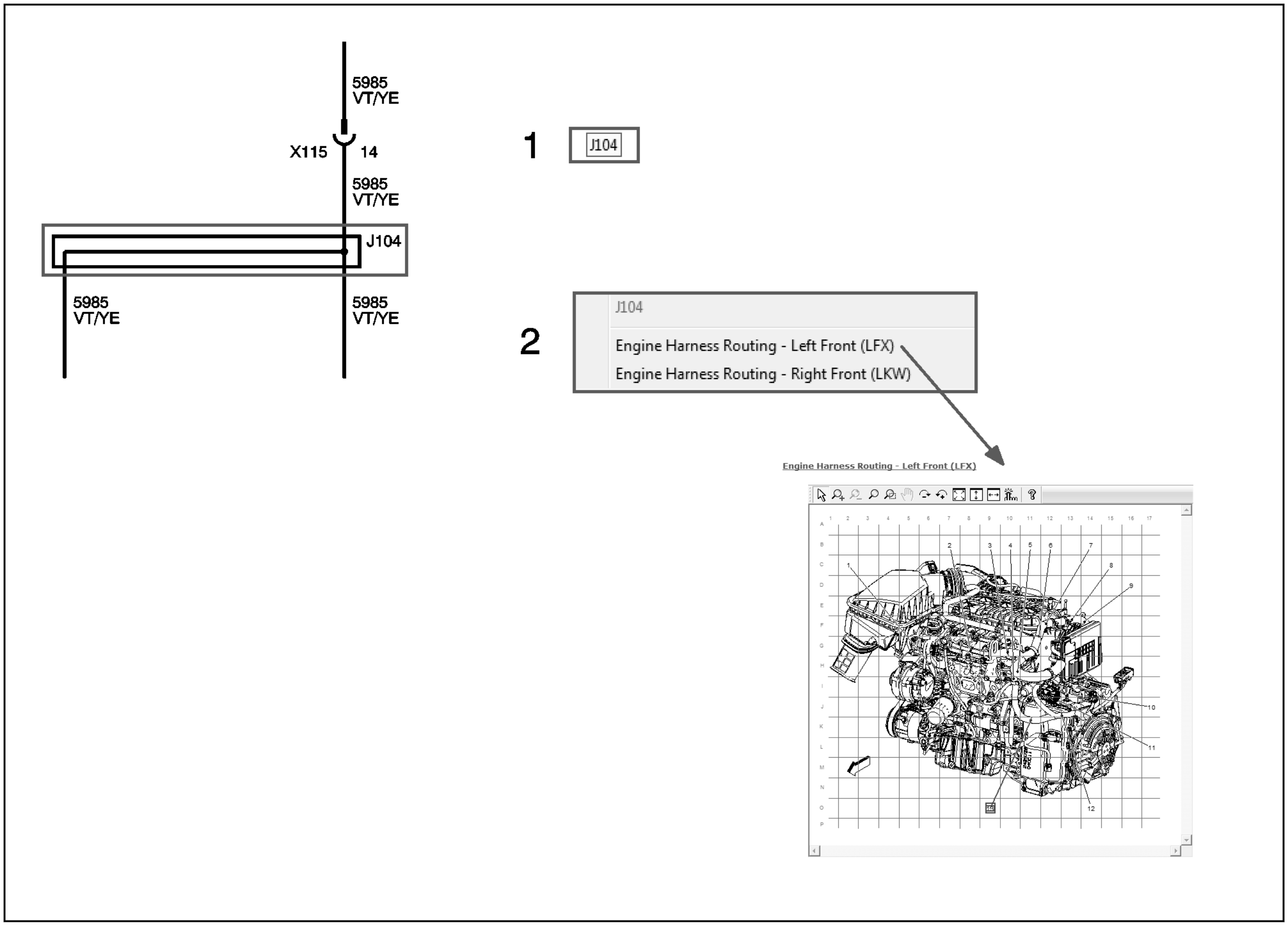
3819141

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

2.2. Links to individual connector end view(s) within the Component Connector End Views.

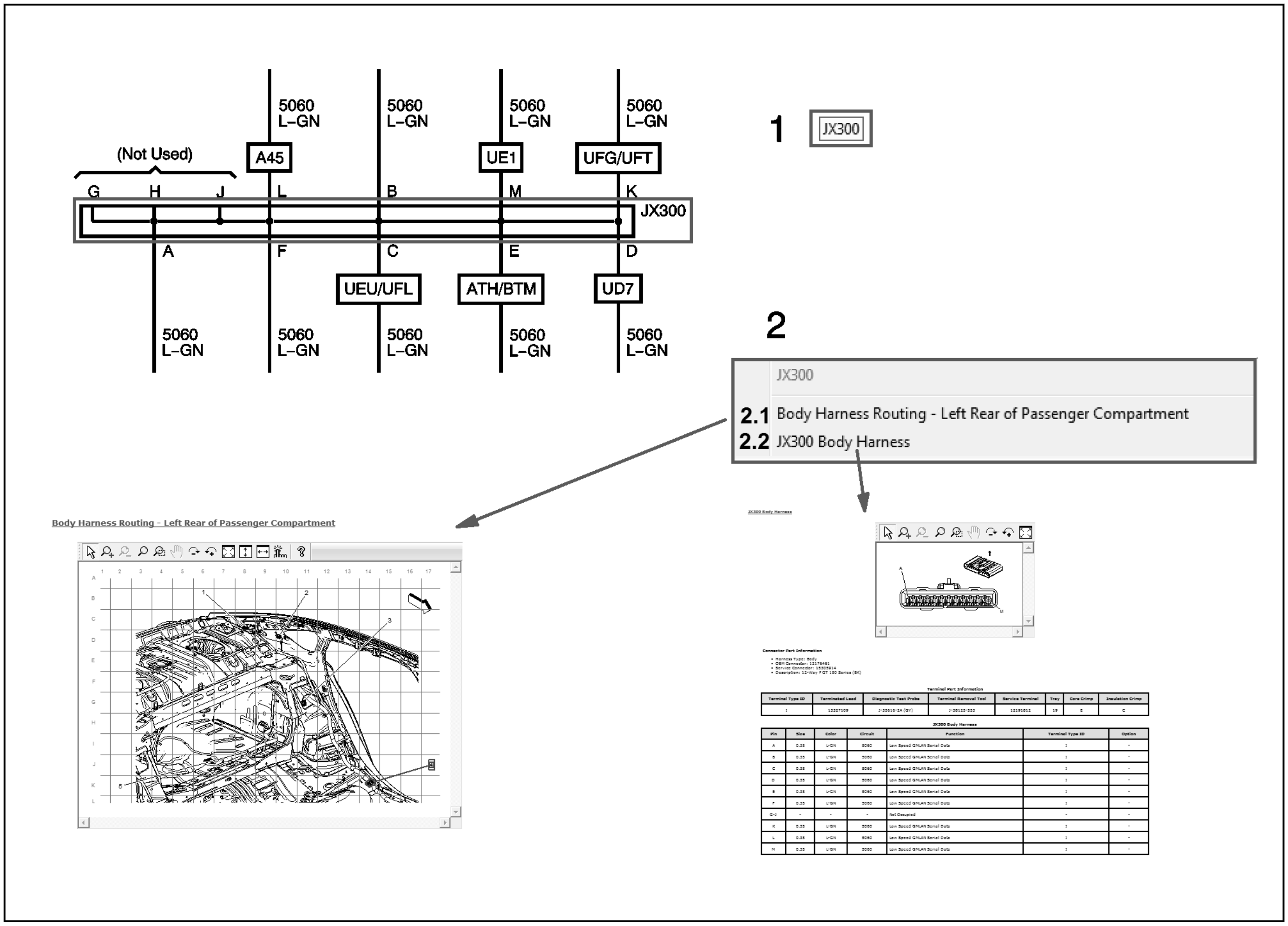
Splice Names


5985
VT/YE
X115
14
5985
VT/YE
J104
5985
VT/YE
5985
VT/YE
1
J104
2
J104
Engine Harness Routing - Left Front (LFX)
Engine Harness Routing - Right Front (LKW)
Engine Harness Routing - Left Front (LFX)

3819287

1. **Mouse-over:** Displays the code of the harness splice.
2. **Hotspot Link to Information:** Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

Splice Pack Names


5060
L–GN
(Not Used)
A45
UE1
UFG/UFT
G
H
J
L
B
M
K
JX300
A
F
C
E
D
UEU/UFL
ATH/BTM
UD7
1
JX300
2
JX300
2.1 Body Harness Routing - Left Rear of Passenger Compartment
2.2 JX300 Body Harness
Body Harness Routing - Left Rear of Passenger Compartment

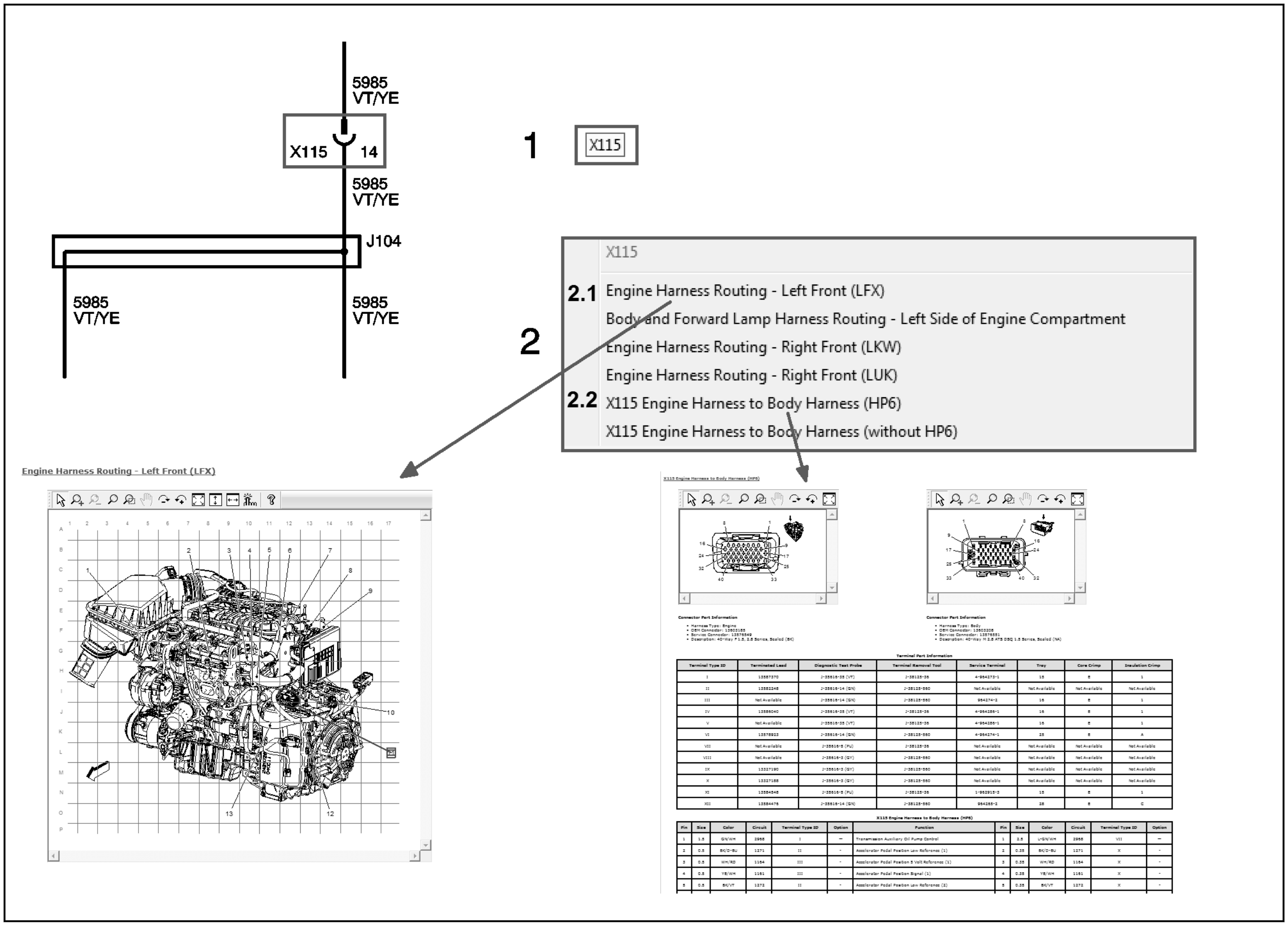
3819454

1. **Mouse-over:** Displays the code of the harness splice pack.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

2.2. Links to individual connector end view(s) within the Splice Pack Connector End Views.

Inline Harness Connector Names


5985
VT/YE
X115
14
5985
VT/YE
J104
5985
VT/YE
5985
VT/YE
1
X115
2
X115
2.1
Engine Harness Routing - Left Front (LFX)
Body and Forward Lamp Harness Routing - Left Side of Engine Compartment
Engine Harness Routing - Right Front (LKW)
Engine Harness Routing - Right Front (LUK)
2.2
X115 Engine Harness to Body Harness (HP6)
X115 Engine Harness to Body Harness (without HP6)
Engine Harness Routing - Left Front (LFX)
X115 Engine Harness to Body Harness (HP6)

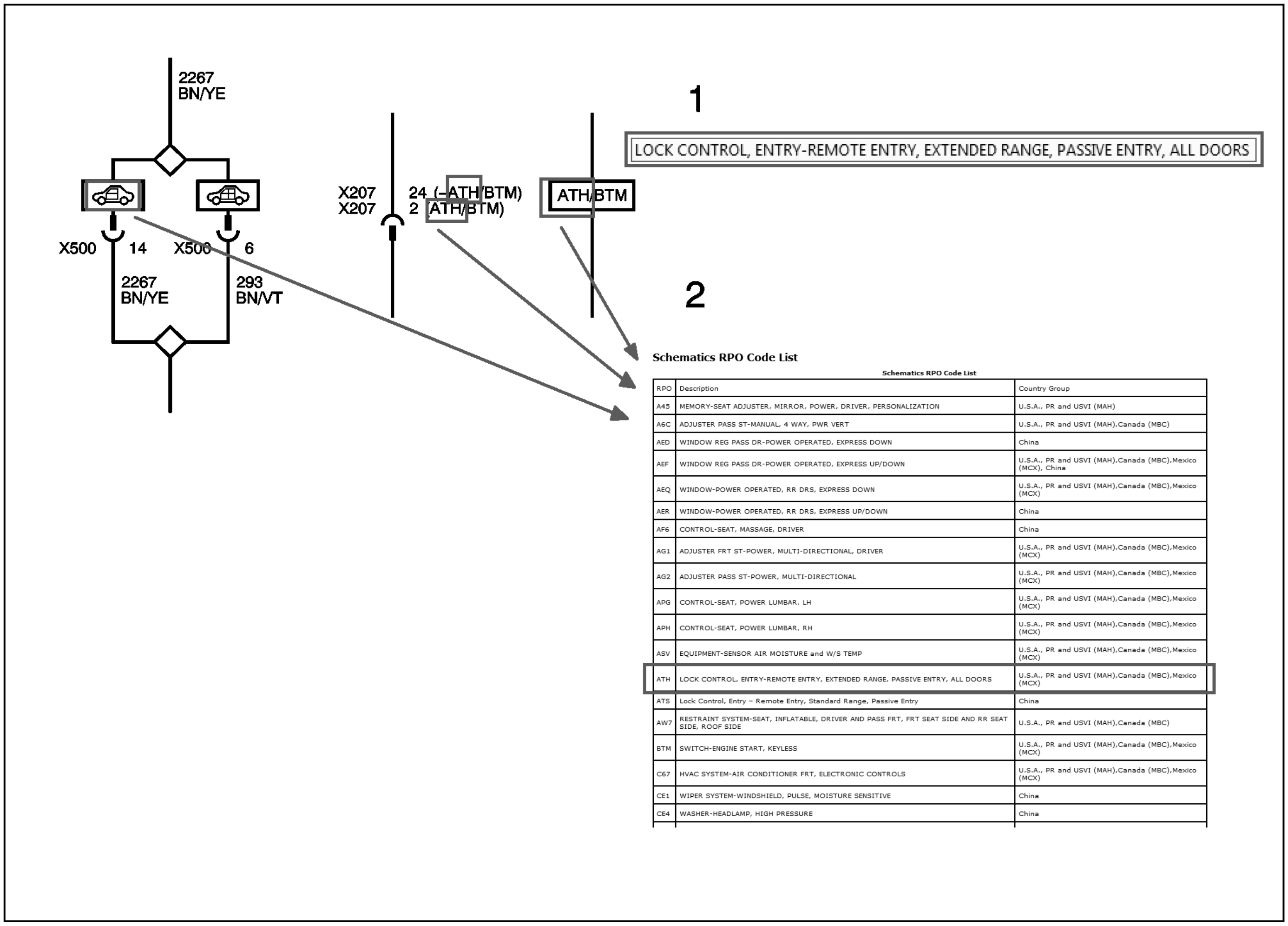
3819345

1. **Mouse-over:** Displays the code of the inline harness connector.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

   2.2. Links to individual connector end view(s) within the Inline Harness Connector End Views.

Regular Production Option (RPO) Codes/Icons


2267
BN/YE
X500
14
X500
6
2267
BN/YE
293
BN/VT
X207
24 (–ATH/BTM)
X207
2 ATH/BTM)
ATH/BTM
1
LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS
2

Schematics RPO Code List

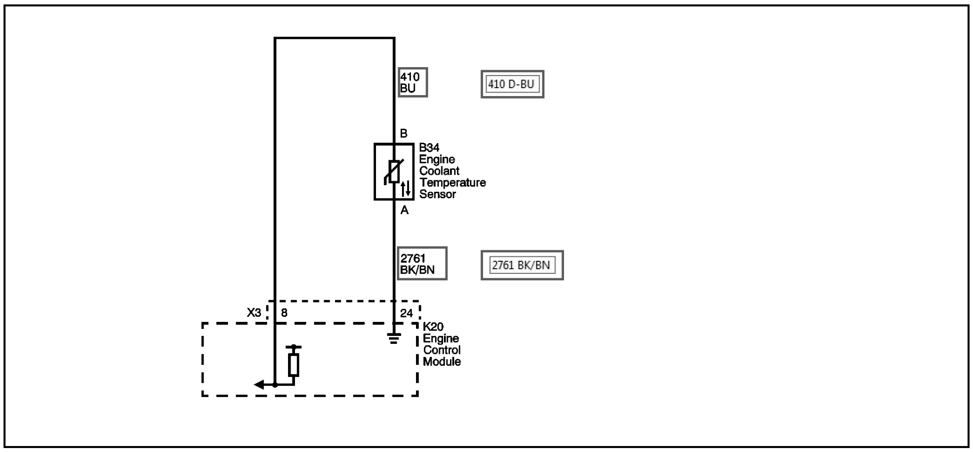
Schematics RPO Code List

RPO	Description	Country Group
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION	U.S.A., PR and USVI (MAH)
A6C	ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT	U.S.A., PR and USVI (MAH),Canada (MBC)
AED	WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN	China
AEF	WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China
AEQ	WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AER	WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN	China
AF6	CONTROL-SEAT, MASSAGE, DRIVER	China
AG1	ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AG2	ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APG	CONTROL-SEAT, POWER LUMBAR, LH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APH	CONTROL-SEAT, POWER LUMBAR, RH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATH	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATS	Lock Control, Entry – Remote Entry, Standard Range, Passive Entry	China
AW7	RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE	U.S.A., PR and USVI (MAH),Canada (MBC)
BTM	SWITCH-ENGINE START, KEYLESS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
C67	HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CE1	WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE	China
CE4	WASHER-HEADLAMP, HIGH PRESSURE	China

3819777

1. **Mouse-over:** Displays the description of the RPO code as well as the country group names where the option is possible to order. Note that each RPO shown will have its own mouse-over and description. Also note that the mouse-over does not include any symbols indicating with (shown as a + sign if combined option) or without (shown as a – sign to mean without/except).
2. **Hotspot Link to Information:** Links to the Schematics RPO Code List that shows the RPO, the description of the option, and the country group names where the option is possible to order.

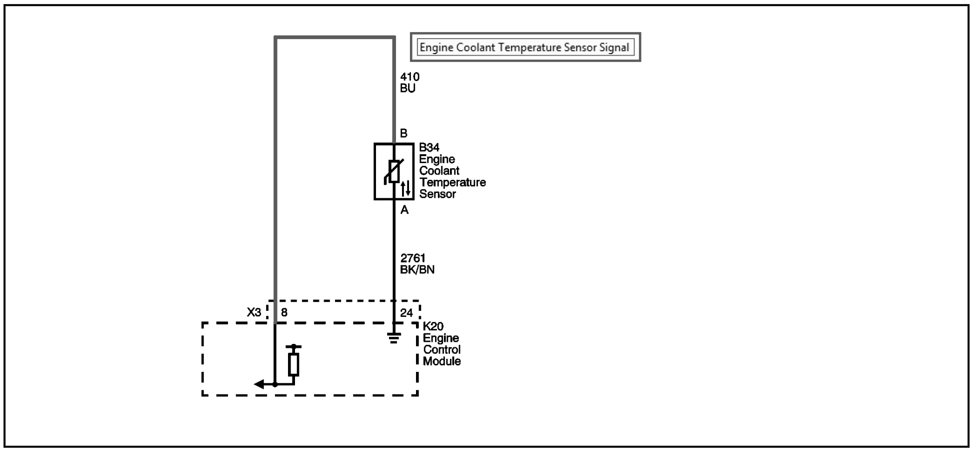
Circuit Number/Wire Colors


410
BU
410 D-BU
B
B34
Engine
Coolant
Temperature
Sensor
A
2761
BK/BN
2761 BK/BN
X3
8
24
K20
Engine
Control
Module

3819880

1. **Mouse-over:** Displays the circuit number (if shown) and the color abbreviation of the wire insulation. Refer to Color Abbreviations for an explanation of each wire color abbreviation. A future update may spell out the wire colors in all languages.
2. **Hotspot Link to Information:** None at this time.

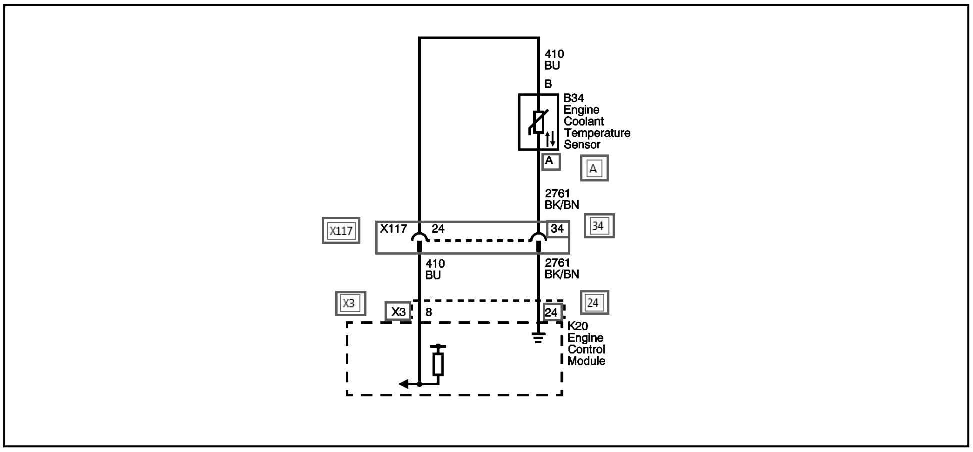
Wire Lines


Engine Coolant Temperature Sensor Signal
410
BU
B
B34
Engine
Coolant
Temperature
Sensor
A
2761
BK/BN
X3
8
24
K20
Engine
Control
Module

3819888

1. **Mouse-over:** Displays the circuit function of the wire as used on the vehicle. This same function is shown in the connector end view pinout table for the component the wire connects. Note if there is no circuit number shown, the circuit will not have an associated mouse-over.
2. **Hotspot Link to Information:** None at this time. A future update may include links to harness routing views to show the routing of the circuit within the vehicle harness.

Connector Identifiers and Cavities

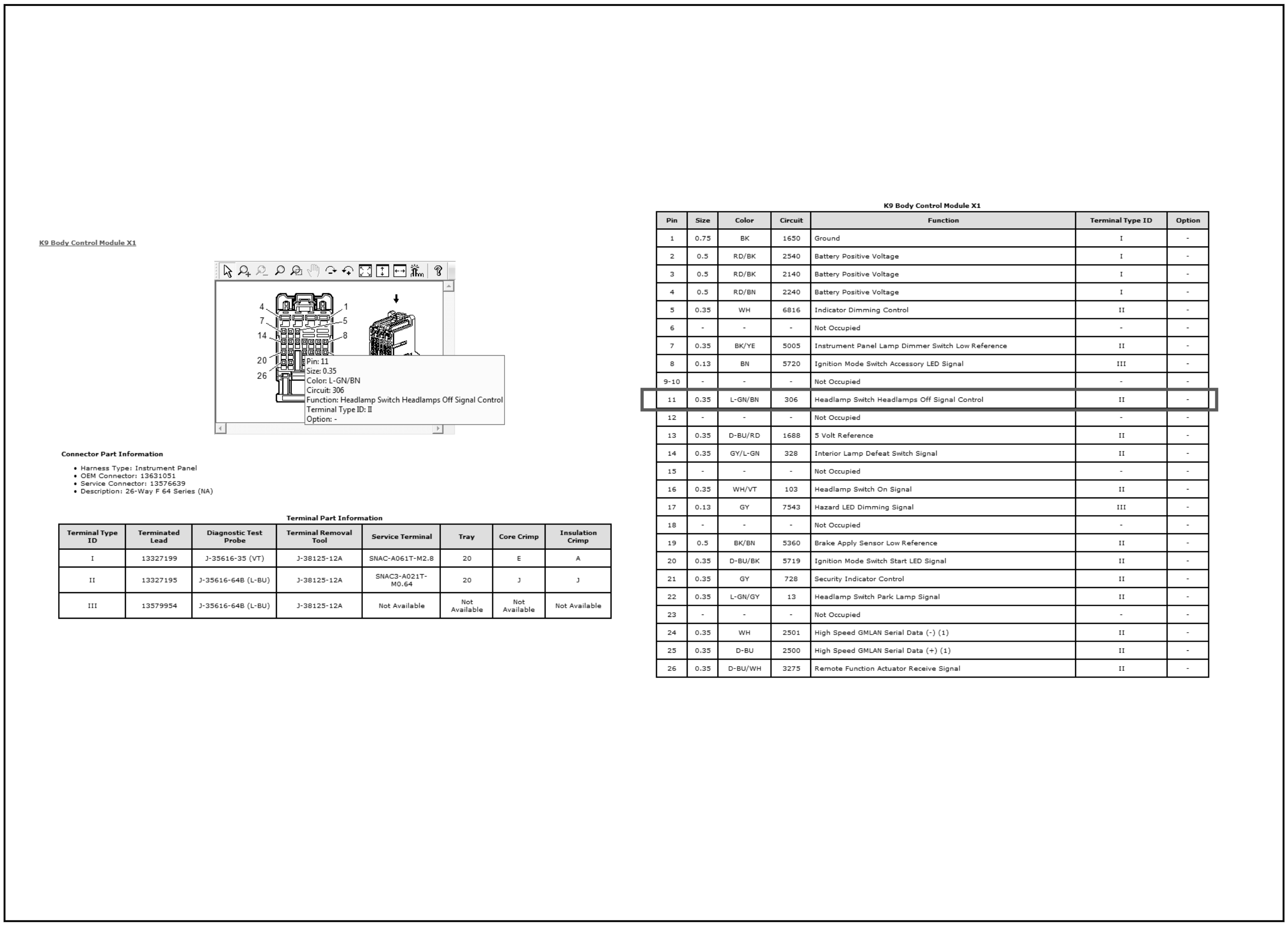

410
BU
B
B34
Engine
Coolant
Temperature
Sensor
A
A
2761
BK/BN
X117
X117
24
34
34
410
BU
2761
BK/BN
X3
X3
8
24
24
K20
Engine
Control
Module

3819889

1. **Mouse-over:** Displays the cavity (pin) identifier (letter/number) for the connection at the component or inline harness connection.
2. **Hotspot Link to Information:** None at this time.

Connector End Views

Connector end view graphics now have mouse-overs to show the wire details of each of the populated cavities. Additionally, the terminal part information has been restructured into an easier to read table.



K9 Body Control Module X1

Pin: 11
Size: 0.35
Color: L-GN/BN
Circuit: 306
Function: Headlamp Switch Headlamps Off Signal Control
Terminal Type ID: II
Option: -

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 13631051
- Service Connector: 13576639
- Description: 26-Way F 64 Series (NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13327199	J-35616-35 (VT)	J-38125-12A	SNAC-A061T-M2.8	20	E	A
II	13327195	J-35616-64B (L-BU)	J-38125-12A	SNAC3-A021T-M0.64	20	J	J
III	13579954	J-35616-64B (L-BU)	J-38125-12A	Not Available	Not Available	Not Available	Not Available

K9 Body Control Module X1

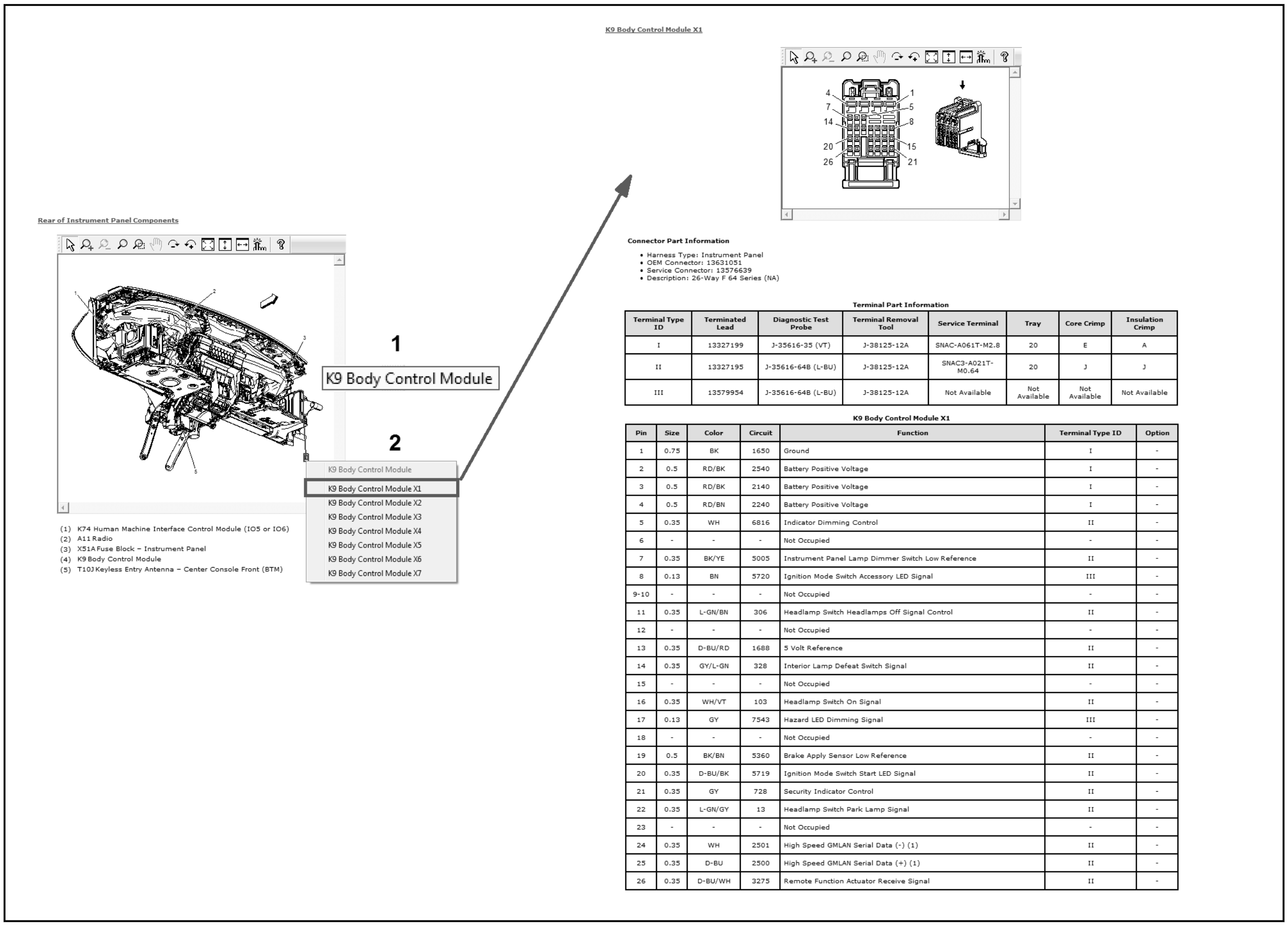
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.75	BK	1650	Ground	I	-
2	0.5	RD/BK	2540	Battery Positive Voltage	I	-
3	0.5	RD/BK	2140	Battery Positive Voltage	I	-
4	0.5	RD/BN	2240	Battery Positive Voltage	I	-
5	0.35	WH	6816	Indicator Dimming Control	II	-
6	-	-	-	Not Occupied	-	-
7	0.35	BK/YE	5005	Instrument Panel Lamp Dimmer Switch Low Reference	II	-
8	0.13	BN	5720	Ignition Mode Switch Accessory LED Signal	III	-
9-10	-	-	-	Not Occupied	-	-
11	0.35	L-GN/BN	306	Headlamp Switch Headlamps Off Signal Control	II	-
12	-	-	-	Not Occupied	-	-
13	0.35	D-BU/RD	1688	5 Volt Reference	II	-
14	0.35	GY/L-GN	328	Interior Lamp Defeat Switch Signal	II	-
15	-	-	-	Not Occupied	-	-
16	0.35	WH/VT	103	Headlamp Switch On Signal	II	-
17	0.13	GY	7543	Hazard LED Dimming Signal	III	-
18	-	-	-	Not Occupied	-	-
19	0.5	BK/BN	5360	Brake Apply Sensor Low Reference	II	-
20	0.35	D-BU/BK	5719	Ignition Mode Switch Start LED Signal	II	-
21	0.35	GY	728	Security Indicator Control	II	-
22	0.35	L-GN/GY	13	Headlamp Switch Park Lamp Signal	II	-
23	-	-	-	Not Occupied	-	-
24	0.35	WH	2501	High Speed GMLAN Serial Data (-) (1)	II	-
25	0.35	D-BU	2500	High Speed GMLAN Serial Data (+) (1)	II	-
26	0.35	D-BU/WH	3275	Remote Function Actuator Receive Signal	II	-

3819951

1. **Mouse-over:** Displays all of the pinout table information for each column including Pin, Size, Color, Circuit, Function, Terminal Type ID, and Option. Note, that not used/not occupied cavities will not have a mouse-over at all. For not used/not occupied cavities, the connector graphic will appear to have a mouse-over, but no information will be displayed in a pop-up menu.
2. **Hotspot Link to Information:** None at this time. A future update may include links to individual subsystem schematic(s) for each circuit.

Component Locator Views

Component locator views now have links to component connector end views.


1
K9 Body Control Module
2
K9 Body Control Module
K9 Body Control Module X1
K9 Body Control Module X2
K9 Body Control Module X3
K9 Body Control Module X4
K9 Body Control Module X5
K9 Body Control Module X6
K9 Body Control Module X7
1
2
3
5
4
1
7
5
14
8
20
15
26
21

Rear of Instrument Panel Components

(1) K74 Human Machine Interface Control Module (IO5 or IO6)
(2) A11 Radio
(3) X51A Fuse Block – Instrument Panel
(4) K9 Body Control Module
(5) T10J Keyless Entry Antenna – Center Console Front (BTM)

K9 Body Control Module X1

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 13631051
- Service Connector: 13576639
- Description: 26-Way F 64 Series (NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13327199	J-35616-35 (VT)	J-38125-12A	SNAC-A061T-M2.8	20	E	A
II	13327195	J-35616-64B (L-BU)	J-38125-12A	SNAC3-A021T-M0.64	20	J	J
III	13579954	J-35616-64B (L-BU)	J-38125-12A	Not Available	Not Available	Not Available	Not Available

K9 Body Control Module X1

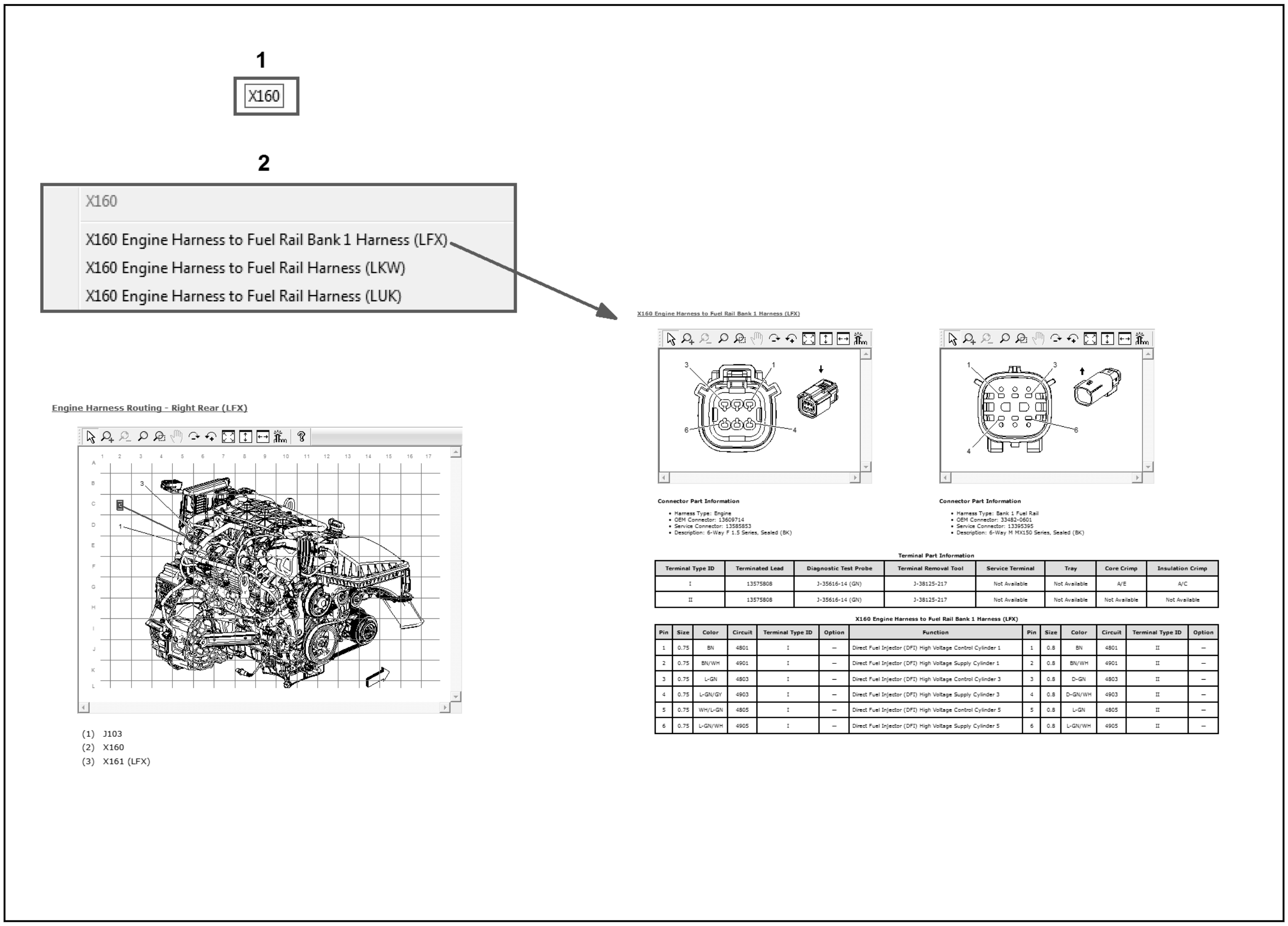
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.75	BK	1650	Ground	I	-
2	0.5	RD/BK	2540	Battery Positive Voltage	I	-
3	0.5	RD/BK	2140	Battery Positive Voltage	I	-
4	0.5	RD/BN	2240	Battery Positive Voltage	I	-
5	0.35	WH	6816	Indicator Dimming Control	II	-
6	-	-	-	Not Occupied	-	-
7	0.35	BK/YE	5005	Instrument Panel Lamp Dimmer Switch Low Reference	II	-
8	0.13	BN	5720	Ignition Mode Switch Accessory LED Signal	III	-
9-10	-	-	-	Not Occupied	-	-
11	0.35	L-GN/BN	306	Headlamp Switch Headlamps Off Signal Control	II	-
12	-	-	-	Not Occupied	-	-
13	0.35	D-BU/RD	1688	5 Volt Reference	II	-
14	0.35	GY/L-GN	328	Interior Lamp Defeat Switch Signal	II	-
15	-	-	-	Not Occupied	-	-
16	0.35	WH/VT	103	Headlamp Switch On Signal	II	-
17	0.13	GY	7543	Hazard LED Dimming Signal	III	-
18	-	-	-	Not Occupied	-	-
19	0.5	BK/BN	5360	Brake Apply Sensor Low Reference	II	-
20	0.35	D-BU/BK	5719	Ignition Mode Switch Start LED Signal	II	-
21	0.35	GY	728	Security Indicator Control	II	-
22	0.35	L-GN/GY	13	Headlamp Switch Park Lamp Signal	II	-
23	-	-	-	Not Occupied	-	-
24	0.35	WH	2501	High Speed GMLAN Serial Data (-) (1)	II	-
25	0.35	D-BU	2500	High Speed GMLAN Serial Data (+) (1)	II	-
26	0.35	D-BU/WH	3275	Remote Function Actuator Receive Signal	II	-

3819952

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:** Links to individual connector end view(s) within Component Connector End Views.

Harness Routing Views

Harness routing views now have links to splice pack and inline harness connector end views.


1
X160
2
X160
X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)
X160 Engine Harness to Fuel Rail Harness (LKW)
X160 Engine Harness to Fuel Rail Harness (LUK)
Engine Harness Routing - Right Rear (LFX)
X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)
1
2
3
4
6

(1) J103
(2) X160
(3) X161 (LFX)

Connector Part Information

- Harness Type: Engine
- OEM Connector: 13609714
- Service Connector: 13585853
- Description: 6-Way F 1.5 Series, Sealed (BK)

Connector Part Information

- Harness Type: Bank 1 Fuel Rail
- OEM Connector: 33482-0601
- Service Connector: 13395395
- Description: 6-Way M MX150 Series, Sealed (BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13575808	J-35616-14 (GN)	J-38125-217	Not Available	Not Available	A/E	A/C
II	13575808	J-35616-14 (GN)	J-38125-217	Not Available	Not Available	Not Available	Not Available

X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)

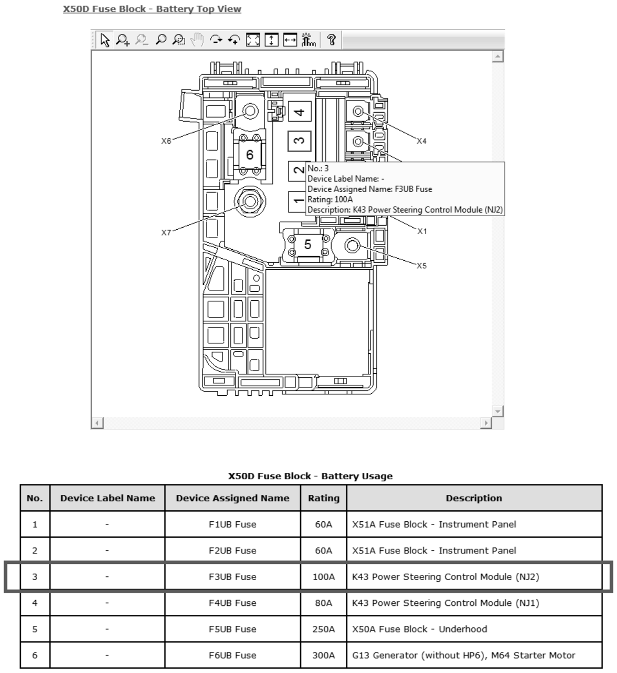
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	0.75	BN	4801	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 1	1	0.8	BN	4801	II	–
2	0.75	BN/WH	4901	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 1	2	0.8	BN/WH	4901	II	–
3	0.75	L-GN	4803	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 3	3	0.8	D-GN	4803	II	–
4	0.75	L-GN/GY	4903	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 3	4	0.8	D-GN/WH	4903	II	–
5	0.75	WH/L-GN	4805	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 5	5	0.8	L-GN	4805	II	–
6	0.75	L-GN/WH	4905	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 5	6	0.8	L-GN/WH	4905	II	–

3819958

1. **Mouse-over:** Displays the code of the harness item.
2. **Hotspot Link to Information:** Links to individual splice pack connector end view(s) within Splice Pack Connector End Views for splice packs and to the individual inline harness connector end view(s) within Inline Harness Connector End Views for inline harness connectors.

Electrical Center Identification Views

Electrical center identification views (top and bottom/ front and back) graphics now have mouse-overs to show the function details of each of utilized devices. Note that the label view will not have any mouse-overs or links at all.



X50D Fuse Block - Battery Top View

No.: 3
Device Label Name: -
Device Assigned Name: F3UB Fuse
Rating: 100A
Description: K43 Power Steering Control Module (NJ2)

X50D Fuse Block - Battery Usage

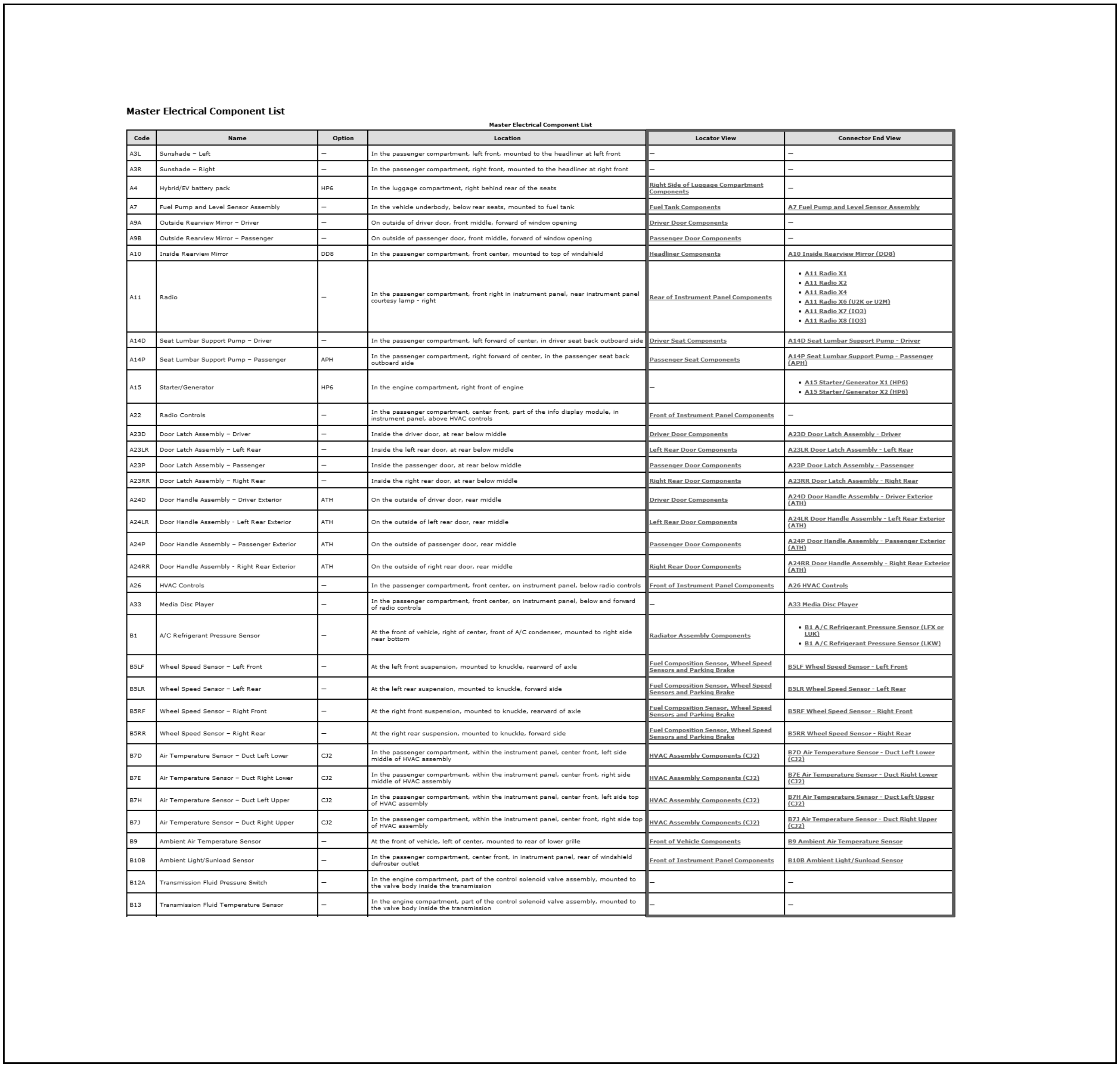
No.	Device Label Name	Device Assigned Name	Rating	Description
1	-	F1UB Fuse	60A	X51A Fuse Block - Instrument Panel
2	-	F2UB Fuse	60A	X51A Fuse Block - Instrument Panel
3	-	F3UB Fuse	100A	K43 Power Steering Control Module (NJ2)
4	-	F4UB Fuse	80A	K43 Power Steering Control Module (NJ1)
5	-	F5UB Fuse	250A	X50A Fuse Block - Underhood
6	-	F6UB Fuse	300A	G13 Generator (without HP6), M64 Starter Motor

3820005

1. **Mouse-over:** Displays all of the usage table information for each column including No., Device Label Name, Device Assigned Name, Rating, and Description. Note, that not used/not occupied devices will not have a mouse-over at all. For not used/not occupied devices, the device graphic may appear to have a mouse-over, but no information will be displayed in a pop-up screen.
2. **Hotspot Link to Information:** None at this time.

Master Electrical Component List

While the master electrical component list format has not changed, it will continue to have links to component locator, harness routing, and connector end views for each of the available electrical devices within the vehicle.



Master Electrical Component List

Master Electrical Component List

Code	Name	Option	Location	Locator View	Connector End View
A3L	Sunshade – Left	—	In the passenger compartment, left front, mounted to the headliner at left front	—	—
A3R	Sunshade – Right	—	In the passenger compartment, right front, mounted to the headliner at right front	—	—
A4	Hybrid/EV battery pack	HP6	In the luggage compartment, right behind rear of the seats	Right Side of Luggage Compartment Components	—
A7	Fuel Pump and Level Sensor Assembly	—	In the vehicle underbody, below rear seats, mounted to fuel tank	Fuel Tank Components	A7 Fuel Pump and Level Sensor Assembly
A9A	Outside Rearview Mirror – Driver	—	On outside of driver door, front middle, forward of window opening	Driver Door Components	—
A9B	Outside Rearview Mirror – Passenger	—	On outside of passenger door, front middle, forward of window opening	Passenger Door Components	—
A10	Inside Rearview Mirror	DD8	In the passenger compartment, front center, mounted to top of windshield	Headliner Components	A10 Inside Rearview Mirror (DD8)
A11	Radio	—	In the passenger compartment, front right in instrument panel, near instrument panel courtesy lamp - right	Rear of Instrument Panel Components	• A11 Radio X1 • A11 Radio X2 • A11 Radio X4 • A11 Radio X6 (U2K or U2M) • A11 Radio X7 (IO3) • A11 Radio X8 (IO3)
A14D	Seat Lumbar Support Pump – Driver	—	In the passenger compartment, left forward of center, in driver seat back outboard side	Driver Seat Components	A14D Seat Lumbar Support Pump - Driver
A14P	Seat Lumbar Support Pump – Passenger	APH	In the passenger compartment, right forward of center, in the passenger seat back outboard side	Passenger Seat Components	A14P Seat Lumbar Support Pump - Passenger (APH)
A15	Starter/Generator	HP6	In the engine compartment, right front of engine	—	• A15 Starter/Generator X1 (HP6) • A15 Starter/Generator X2 (HP6)
A22	Radio Controls	—	In the passenger compartment, center front, part of the info display module, in instrument panel, above HVAC controls	Front of Instrument Panel Components	—
A23D	Door Latch Assembly – Driver	—	Inside the driver door, at rear below middle	Driver Door Components	A23D Door Latch Assembly - Driver
A23LR	Door Latch Assembly – Left Rear	—	Inside the left rear door, at rear below middle	Left Rear Door Components	A23LR Door Latch Assembly - Left Rear
A23P	Door Latch Assembly – Passenger	—	Inside the passenger door, at rear below middle	Passenger Door Components	A23P Door Latch Assembly - Passenger
A23RR	Door Latch Assembly – Right Rear	—	Inside the right rear door, at rear below middle	Right Rear Door Components	A23RR Door Latch Assembly - Right Rear
A24D	Door Handle Assembly – Driver Exterior	ATH	On the outside of driver door, rear middle	Driver Door Components	A24D Door Handle Assembly - Driver Exterior (ATH)
A24LR	Door Handle Assembly - Left Rear Exterior	ATH	On the outside of left rear door, rear middle	Left Rear Door Components	A24LR Door Handle Assembly - Left Rear Exterior (ATH)
A24P	Door Handle Assembly – Passenger Exterior	ATH	On the outside of passenger door, rear middle	Passenger Door Components	A24P Door Handle Assembly - Passenger Exterior (ATH)
A24RR	Door Handle Assembly - Right Rear Exterior	ATH	On the outside of right rear door, rear middle	Right Rear Door Components	A24RR Door Handle Assembly - Right Rear Exterior (ATH)
A26	HVAC Controls	—	In the passenger compartment, front center, on instrument panel, below radio controls	Front of Instrument Panel Components	A26 HVAC Controls
A33	Media Disc Player	—	In the passenger compartment, front center, on instrument panel, below and forward of radio controls	—	A33 Media Disc Player
B1	A/C Refrigerant Pressure Sensor	—	At the front of vehicle, right of center, front of A/C condenser, mounted to right side near bottom	Radiator Assembly Components	• B1 A/C Refrigerant Pressure Sensor (LFX or LUK) • B1 A/C Refrigerant Pressure Sensor (LKW)
B5LF	Wheel Speed Sensor – Left Front	—	At the left front suspension, mounted to knuckle, rearward of axle	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5LF Wheel Speed Sensor - Left Front
B5LR	Wheel Speed Sensor – Left Rear	—	At the left rear suspension, mounted to knuckle, forward side	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5LR Wheel Speed Sensor - Left Rear
B5RF	Wheel Speed Sensor – Right Front	—	At the right front suspension, mounted to knuckle, rearward of axle	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5RF Wheel Speed Sensor - Right Front
B5RR	Wheel Speed Sensor – Right Rear	—	At the right rear suspension, mounted to knuckle, forward side	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5RR Wheel Speed Sensor - Right Rear
B7D	Air Temperature Sensor – Duct Left Lower	CJ2	In the passenger compartment, within the instrument panel, center front, left side middle of HVAC assembly	HVAC Assembly Components (CJ2)	B7D Air Temperature Sensor - Duct Left Lower (CJ2)
B7E	Air Temperature Sensor – Duct Right Lower	CJ2	In the passenger compartment, within the instrument panel, center front, right side middle of HVAC assembly	HVAC Assembly Components (CJ2)	B7E Air Temperature Sensor - Duct Right Lower (CJ2)
B7H	Air Temperature Sensor – Duct Left Upper	CJ2	In the passenger compartment, within the instrument panel, center front, left side top of HVAC assembly	HVAC Assembly Components (CJ2)	B7H Air Temperature Sensor - Duct Left Upper (CJ2)
B7J	Air Temperature Sensor – Duct Right Upper	CJ2	In the passenger compartment, within the instrument panel, center front, right side top of HVAC assembly	HVAC Assembly Components (CJ2)	B7J Air Temperature Sensor - Duct Right Upper (CJ2)
B9	Ambient Air Temperature Sensor	—	At the front of vehicle, left of center, mounted to rear of lower grille	Front of Vehicle Components	B9 Ambient Air Temperature Sensor
B10B	Ambient Light/Sunload Sensor	—	In the passenger compartment, center front, in instrument panel, rear of windshield defroster outlet	Front of Instrument Panel Components	B10B Ambient Light/Sunload Sensor
B12A	Transmission Fluid Pressure Switch	—	In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission	—	—
B13	Transmission Fluid Temperature Sensor	—	In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission	—	—

3820020

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:**
   - ⇒ A future update may include links to individual subsystem schematic(s) for each component/ harness item.
   - ⇒ **Components**
     - − Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.
     - − Links to individual connector end view(s) within Component Connector End Views.
   - ⇒ **Electrical Centers (Fuse Blocks)**
     - − Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.
     - − Links to individual connector end view(s) within Electrical Center Identification Views.
   - ⇒ **Inline Harness Connectors**
     - − Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.
     - − Links to individual connector end view(s) within Inline Harness Connector End Views.
   - ⇒ **Grounds**

- Links to individual locator view within Ground Views component view and will show where the ground is located in the vehicle.

⇒ **Splices**

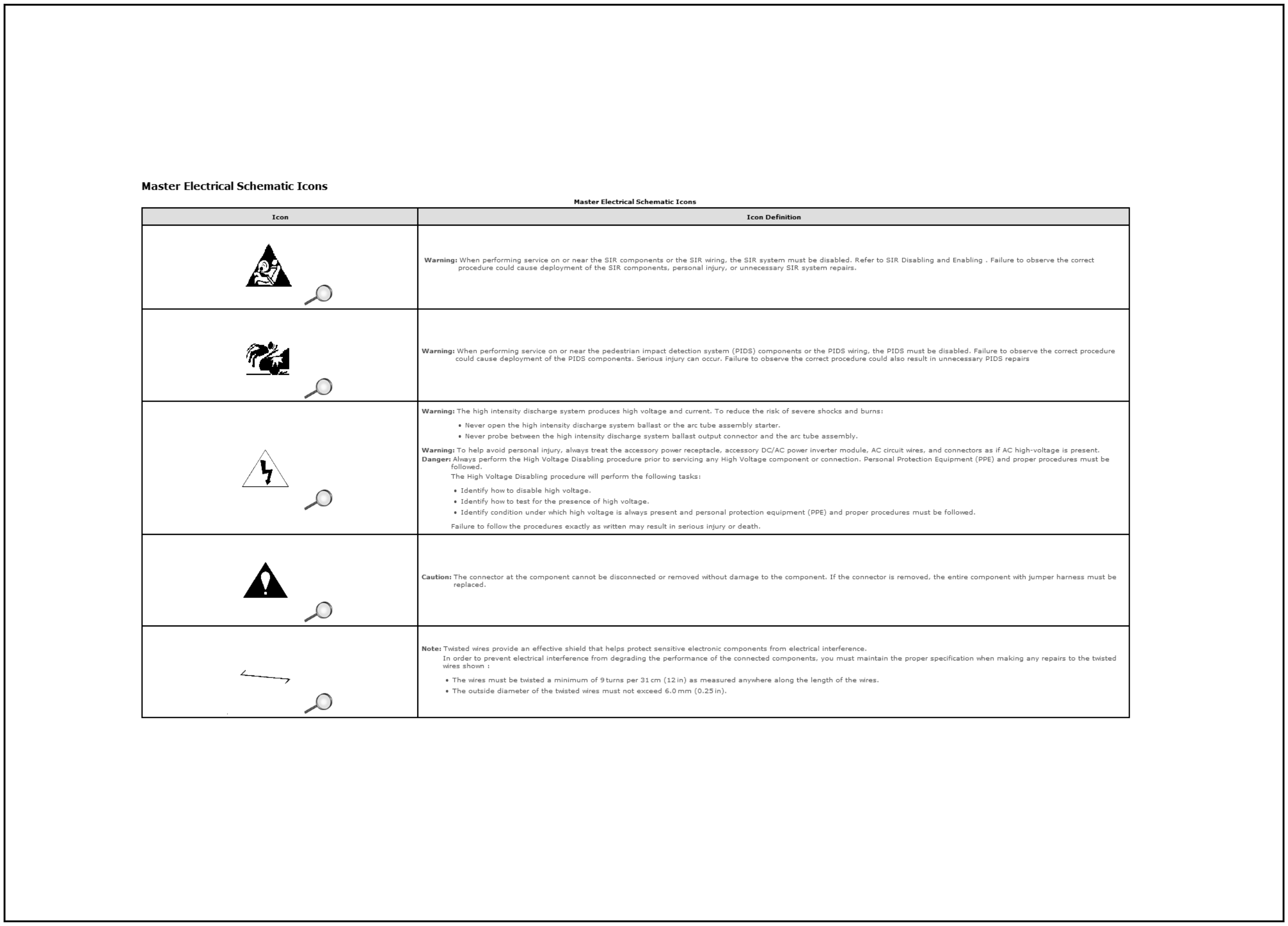
- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.

⇒ **Splice Packs**

- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.
- Links to individual connector end view(s) within Splice Pack Connector End Views.

Master Electrical Schematic Icons

While the master electrical schematic icons list format has not changed, it will continue to include icons used in the vehicle schematics along with the message for the icon.



Master Electrical Schematic Icons

Master Electrical Schematic Icons

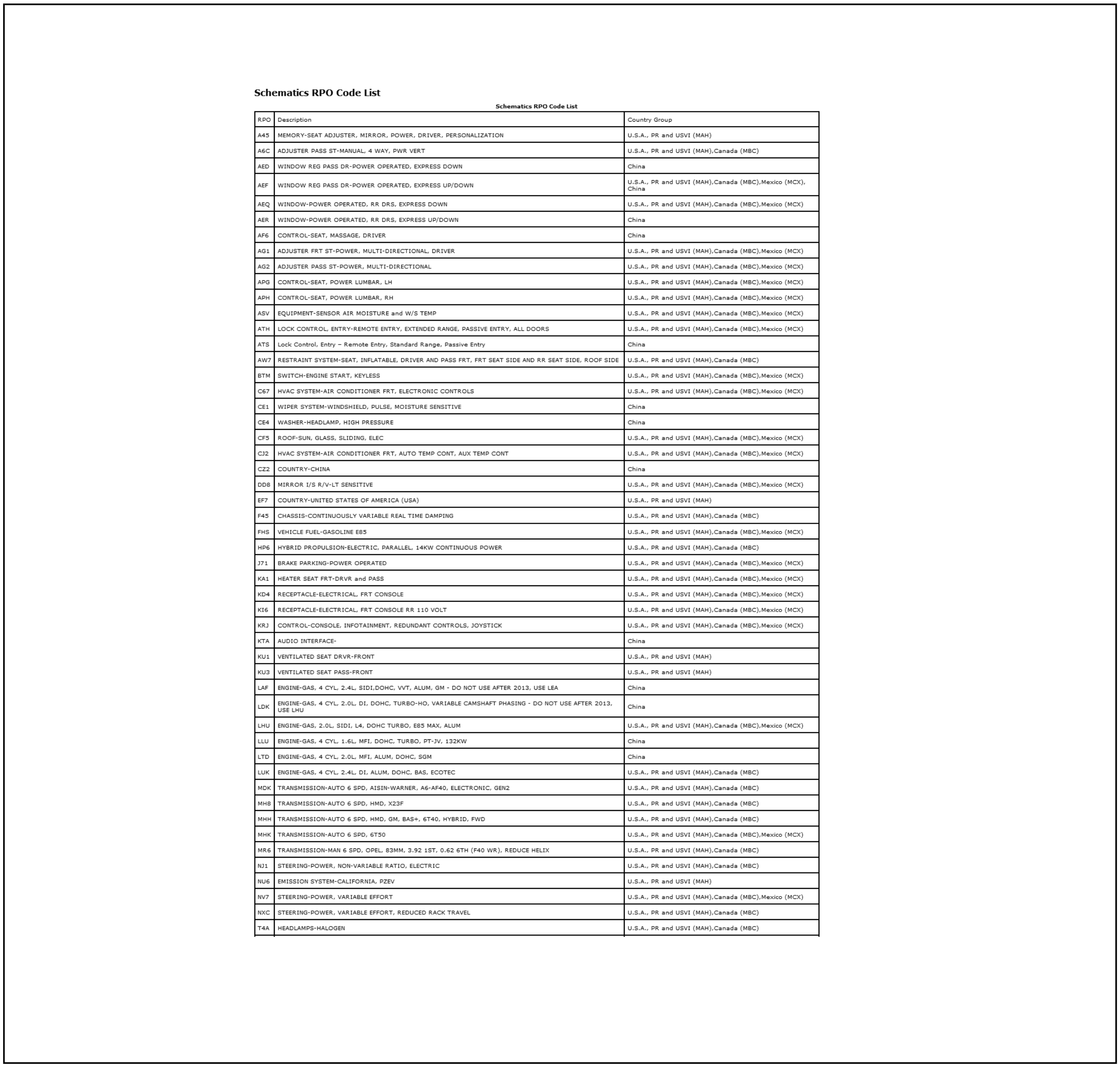
Icon	Icon Definition
	Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.
	Warning: When performing service on or near the pedestrian impact detection system (PIDS) components or the PIDS wiring, the PIDS must be disabled. Failure to observe the correct procedure could cause deployment of the PIDS components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary PIDS repairs
	Warning: The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns: • Never open the high intensity discharge system ballast or the arc tube assembly starter. • Never probe between the high intensity discharge system ballast output connector and the arc tube assembly. **Warning:** To help avoid personal injury, always treat the accessory power receptacle, accessory DC/AC power inverter module, AC circuit wires, and connectors as if AC high-voltage is present. **Danger:** Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed. The High Voltage Disabling procedure will perform the following tasks: • Identify how to disable high voltage. • Identify how to test for the presence of high voltage. • Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed. Failure to follow the procedures exactly as written may result in serious injury or death.
	Caution: The connector at the component cannot be disconnected or removed without damage to the component. If the connector is removed, the entire component with jumper harness must be replaced.
	Note: Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference. In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown : • The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in).

3820510

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

Schematic RPO Code List

The schematic RPO code list only includes RPOs shown in schematics and also includes the country groupings for the options. This list is in addition to the vehicle RPO Code List that is included in General Information.



Schematics RPO Code List

Schematics RPO Code List

RPO	Description	Country Group
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION	U.S.A., PR and USVI (MAH)
A6C	ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT	U.S.A., PR and USVI (MAH),Canada (MBC)
AED	WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN	China
AEF	WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China
AEQ	WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AER	WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN	China
AF6	CONTROL-SEAT, MASSAGE, DRIVER	China
AG1	ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AG2	ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APG	CONTROL-SEAT, POWER LUMBAR, LH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APH	CONTROL-SEAT, POWER LUMBAR, RH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATH	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATS	Lock Control, Entry – Remote Entry, Standard Range, Passive Entry	China
AW7	RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE	U.S.A., PR and USVI (MAH),Canada (MBC)
BTM	SWITCH-ENGINE START, KEYLESS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
C67	HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CE1	WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE	China
CE4	WASHER-HEADLAMP, HIGH PRESSURE	China
CF5	ROOF-SUN, GLASS, SLIDING, ELEC	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CJ2	HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CZ2	COUNTRY-CHINA	China
DD8	MIRROR I/S R/V-LT SENSITIVE	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
EF7	COUNTRY-UNITED STATES OF AMERICA (USA)	U.S.A., PR and USVI (MAH)
F45	CHASSIS-CONTINUOUSLY VARIABLE REAL TIME DAMPING	U.S.A., PR and USVI (MAH),Canada (MBC)
FHS	VEHICLE FUEL-GASOLINE E85	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
HP6	HYBRID PROPULSION-ELECTRIC, PARALLEL, 14KW CONTINUOUS POWER	U.S.A., PR and USVI (MAH),Canada (MBC)
J71	BRAKE PARKING-POWER OPERATED	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KA1	HEATER SEAT FRT-DRVR and PASS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KD4	RECEPTACLE-ELECTRICAL, FRT CONSOLE	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KI6	RECEPTACLE-ELECTRICAL, FRT CONSOLE RR 110 VOLT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KRJ	CONTROL-CONSOLE, INFOTAINMENT, REDUNDANT CONTROLS, JOYSTICK	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KTA	AUDIO INTERFACE-	China
KU1	VENTILATED SEAT DRVR-FRONT	U.S.A., PR and USVI (MAH)
KU3	VENTILATED SEAT PASS-FRONT	U.S.A., PR and USVI (MAH)
LAF	ENGINE-GAS, 4 CYL, 2.4L, SIDI,DOHC, VVT, ALUM, GM - DO NOT USE AFTER 2013, USE LEA	China
LDK	ENGINE-GAS, 4 CYL, 2.0L, DI, DOHC, TURBO-HO, VARIABLE CAMSHAFT PHASING - DO NOT USE AFTER 2013, USE LHU	China
LHU	ENGINE-GAS, 2.0L, SIDI, L4, DOHC TURBO, E85 MAX, ALUM	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
LLU	ENGINE-GAS, 4 CYL, 1.6L, MFI, DOHC, TURBO, PT-JV, 132KW	China
LTD	ENGINE-GAS, 4 CYL, 2.0L, MFI, ALUM, DOHC, SGM	China
LUK	ENGINE-GAS, 4 CYL, 2.4L, DI, ALUM, DOHC, BAS, ECOTEC	U.S.A., PR and USVI (MAH),Canada (MBC)
MDK	TRANSMISSION-AUTO 6 SPD, AISIN-WARNER, A6-AF40, ELECTRONIC, GEN2	U.S.A., PR and USVI (MAH),Canada (MBC)
MH8	TRANSMISSION-AUTO 6 SPD, HMD, X23F	U.S.A., PR and USVI (MAH),Canada (MBC)
MHH	TRANSMISSION-AUTO 6 SPD, HMD, GM, BAS+, 6T40, HYBRID, FWD	U.S.A., PR and USVI (MAH),Canada (MBC)
MHK	TRANSMISSION-AUTO 6 SPD, 6T50	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
MR6	TRANSMISSION-MAN 6 SPD, OPEL, 83MM, 3.92 1ST, 0.62 6TH (F40 WR), REDUCE HELIX	U.S.A., PR and USVI (MAH),Canada (MBC)
NJ1	STEERING-POWER, NON-VARIABLE RATIO, ELECTRIC	U.S.A., PR and USVI (MAH),Canada (MBC)
NU6	EMISSION SYSTEM-CALIFORNIA, PZEV	U.S.A., PR and USVI (MAH)
NV7	STEERING-POWER, VARIABLE EFFORT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
NXC	STEERING-POWER, VARIABLE EFFORT, REDUCED RACK TRAVEL	U.S.A., PR and USVI (MAH),Canada (MBC)
T4A	HEADLAMPS-HALOGEN	U.S.A., PR and USVI (MAH),Canada (MBC)

3820023

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

Electrical Schematic Symbols

Voltage Indicators

Symbol	Description
B+ 1988677	Battery Voltage
IGN 0 1988679	Ignition Switch– Off Position
IGN I 1988682	Ignition Switch– Accessory Position
IGN II 1988686	Ignition Switch– Run Position
IGN II 1988691	Ignition Switch– Start Position

General Icons

Symbol	Description
LOC 1990537	Master Component List Icon This icon is used on the schematic to link to the Master Electrical Component List.
DESC 1990538	Description and Operation Icon This icon is used on the schematic to link to the Description and Operation of that particular system.

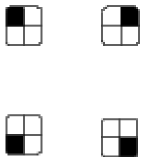
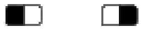
Symbol	Description
1988674	Computer Programming Icon This icon is used on the schematic to link to Control Module References, which identifies which components need programming upon replacement.
➡ 1990541	Next Schematic Page Icon This icon is used on the schematic to navigate to the next schematic in the subsystem.
⬅ 1990542	Previous Schematic Page Icon This icon is used on the schematic to navigate to the previous schematic in the subsystem.
▲ 1988667	Supplemental Inflatable Restraint (SIR) or Supplemental Restraint System (SRS) Icon This icon is used to alert the technician that the system contains SIR/SRS components that require certain precautions before servicing.

Symbol	Description
⚠ 1988670	Information Icon This icon is used to alert the technician that there is additional information that will aid in servicing a system.
▲ 1988672	Danger Icon This icon is intended to alert the technician that a component within the system contains labeling with the same icon. This icon is used when a source component has potential for 60 volts DC or greater or has potential for 42 volts AC or greater.
⚡ 1988673	High Voltage Icon This icon is intended to alert the technician that a component within the system contains labeling with the same icon. This icon is used when a component/circuit has potential for 60 volts DC or greater or has potential for 42 volts AC or greater.

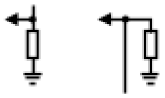
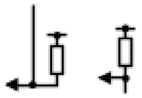
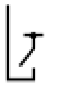
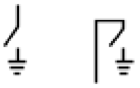
Symbol	Description
⚠ 1990543	Caution Icon This icon is used to advise the technician to use caution when servicing this component. This icon may be used when a component/circuit has a voltage range potential between 30-60 volts DC or 15-42 volts AC.
⇅ 1988675	Functional Serial Data Communication This icon is used to show the technician that the serial data circuit detail is shown incomplete. It also provides an active link to the Data Communication Schematics were the circuit is shown complete.

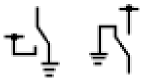
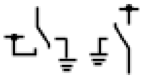
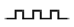
Switch Position Icons

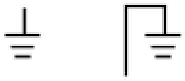
Symbol	Description
↑ ∧ △ 1989016	Generic Up Arrows
↓ ∨ ▽ 1990554	Generic Down Arrows
← < ◁ 1990555	Generic Left Arrows
→ > ▷ 1990556	Generic Right Arrows
↓↓ 1990557	Generic Express Down Arrows
⏻ 1990558	On/Off Icon

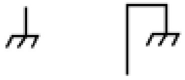
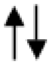
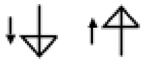
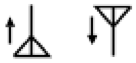
Symbol	Description
🔒 1990559	Generic Lock Icon
🔓 1990560	Generic Unlock Icon
 1989018	Generic Window Switch Positions– 4 Door
 1989020	Generic Window Switch Positions– 2 Door

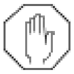
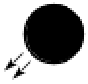
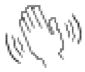
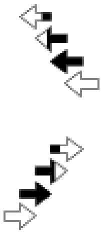
Module Circuit Function Icons

Symbol	Description
 1988774	I/O Pull-Down Resistors (−)
 1990567	I/O Pull-Up Resistors (+)
 1988775	I/O High-Side Drive Switch (+)
 1990568	I/O Low-Side Drive Switch (−)

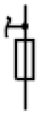
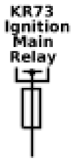
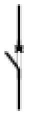
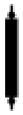
Symbol	Description
 1990570	I/O Bidirectional Switch (+/−)
 6535609	I/O Bidirectional Switch (+/−) Neutral State
 1990571	Pulse-Width Modulation Symbol
B+ 1990573	Battery Voltage

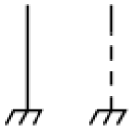
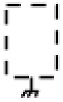
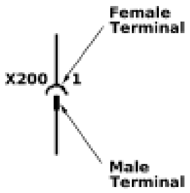
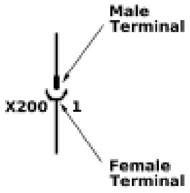
Symbol	Description
IGN 1990574	Ignition Voltage
5V 1990576	Voltage Reference
5V AC 1990577	A/C Voltage
 1988986	Low Reference

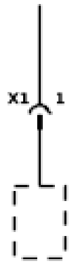
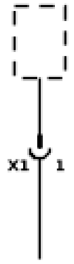
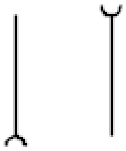
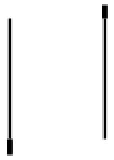
Symbol	Description
 1990578	Ground
 1990579	Serial Data
 1988973	Antenna Signal– In
 1988974	Antenna Signal– Out

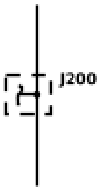
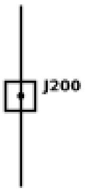
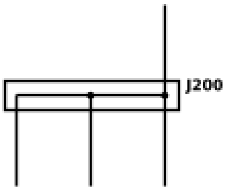
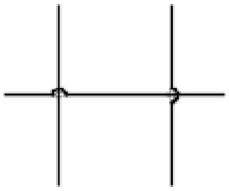
Symbol	Description
 2161152	Brake Apply
 5371975	Bulb Out
 6659366	Approach Lighting Animation
 6659367	Sequential Turn Signal Animation

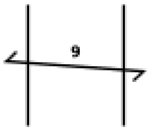
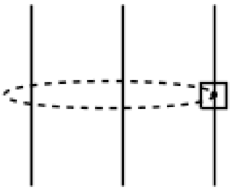
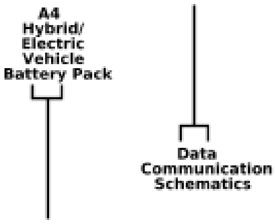
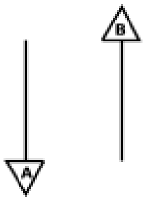
Harness Components

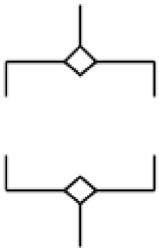
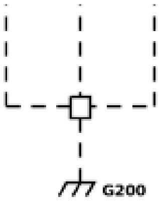
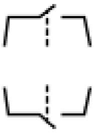
Symbol	Description
 1988731	Fuse
 KR73 Ignition Main Relay 1988733	Fuse Supplied by a Relay
 1988740	Circuit Breaker
 1988745	Fusible Link

Symbol	Description
 1988987	Ground
 1988746	Case Ground
 Female Terminal X200 1 Male Terminal 1988977	Inline Harness Connector
 Male Terminal X200 1 Female Terminal 1990974	Inline Harness Connector

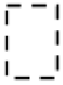
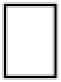
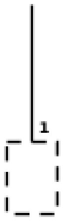
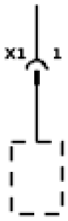
Symbol	Description
 1990975	Pigtail Connection
 1990976	Pigtail Connection
 1990977	Provisional or Diagnostic Connector
 1990978	Blunt Cut Wire

Symbol	Description
 1988980	Incomplete Physical Splice
 1988981	Complete Physical Splice– 2 Wires
 1988982	Complete Physical Splice– 3 or more wires
 1990979	Wire Crosses

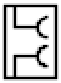
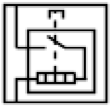
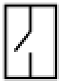
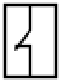
Symbol	Description
 1988988	Twisted Wires
 1988990	Shield
 A4 Hybrid/ Electric Vehicle Battery Pack Data Communication Schematics 1990980	Circuit References
 1990981	Circuit Continuation Arrowheads

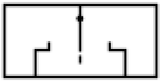
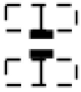
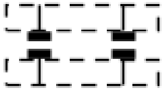
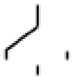
Symbol	Description
 1988983	Option Breakpoint
 1988984	Ground Circuit Connection
 1988985	Connector Shorting Clip

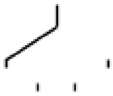
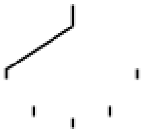
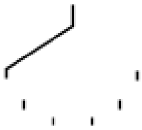
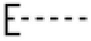
Component Parts

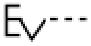
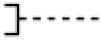
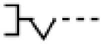
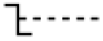
Symbol	Description
 1988694	Partial Component When a component is represented in a dashed box, the component or its wiring is not shown in its entirety.
 1988698	Entire Component When a component is represented in a solid box the component or its wiring is shown in its entirety.
 1988712	Connector Directly Attached to Component
 1988715	Pigtail Connector

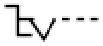
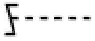
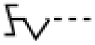
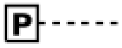
Switches and Relays

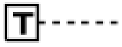
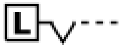
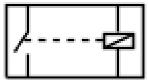
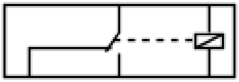
Symbol	Description
 1991015	Accessory Power Outlet
 1991016	Cigar Lighter
 1988991	Switch– 2 Position Normally Open
 1988992	Switch– 2 Position Normally Closed

Symbol	Description
 1988993	Switch– Rocker
 1991017	Switch– Contact Plate (1 Wire)
 1988994	Switch– Contact Plate (2 Wire)
 1991018	Switch– 3 Position

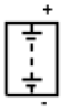
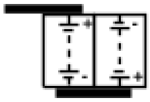
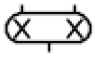
Symbol	Description
 1988995	Switch– 4 Position
 1991019	Switch– 5 Position
 1991021	Switch– 6 Position
 1988997	Switch Actuator– Push (Momentary)

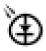
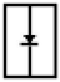
Symbol	Description
 1988998	Switch Actuator– Push (Latching)
 1988999	Switch Actuator– Pull (Momentary)
 1989000	Switch Actuator– Pull (Latching)
 1989001	Switch Actuator– Rotate (Momentary)

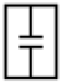
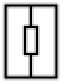
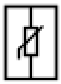
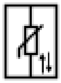
Symbol	Description
 1989002	Switch Actuator– Rotate (Latching)
 1989003	Switch Actuator– Slide (Momentary)
 1989004	Switch Actuator– Slide (Latching)
 1989007	Switch Actuator– Pressure (Momentary)

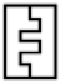
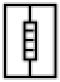
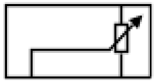
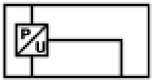
Symbol	Description
 1989010	Switch Actuator– Temperature (Momentary)
 1989013	Switch Actuator– Volume (Latching)
 1988975	4-Pin Single Pole/Throw Relay– Normally Open
 1990539	5-Pin Relay– Normally Closed

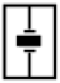
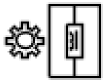
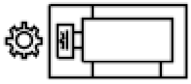
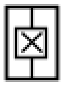
Devices and Sensors

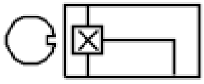
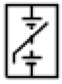
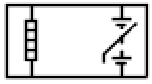
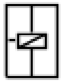
Symbol	Description
 1988751	Battery
 1988753	Battery Assembly– Hybrid
1988717	Single Filament Light Bulb
 1988719	Double Filament Light Bulb

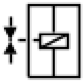
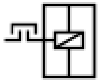
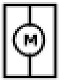
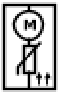
Symbol	Description
1988722	Light Emitting Diode (LED)
 1988725	Photo Sensor
1990988	Gauge
 1988776	Diode

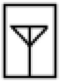
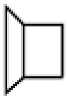
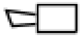
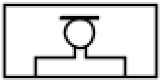
Symbol	Description
 1988748	Capacitor
 1988755	Resistor
 1988759	Variable Resistor
 1990991	Variable Resistor– NTC

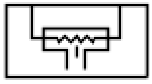
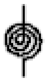
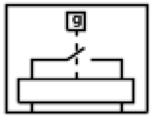
Symbol	Description
 1990992	Breakable Wire
 1988778	Heating Element
 1988771	Position Sensor
 1988773	Pressure Sensor

Symbol	Description
 1990993	Knock Sensor
 1990994	Inductive Type Sensor– 2-Wire
 1990996	Inductive Type Sensor– 3-Wire
 1990998	Hall Effect Sensor– 2-Wire

Symbol	Description
 1990999	Hall Effect Sensor– 3-Wire
 1991000	Oxygen Sensor– 2-Wire
 1991001	Heated Oxygen Sensor– 4-Wire
 1988970	Solenoid– Actuator

Symbol	Description
 1988971	Solenoid– Valve
 1988972	Clutch
 1988779	Motor
 1991003	Motor with PTC

Symbol	Description
 1988729	Antenna
 1991005	Speaker
 1991006	Horn
 1991007	Microphone

Symbol	Description
 1991008	Airbag
 1991009	SIR Coil
 1991010	SIR Impact Sensor

Schematics RPO Code List

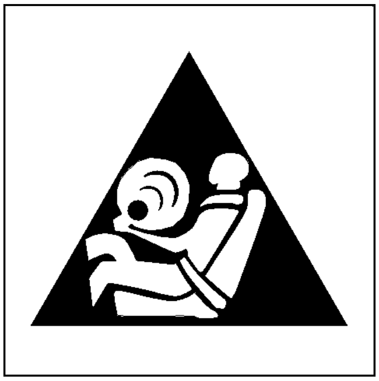
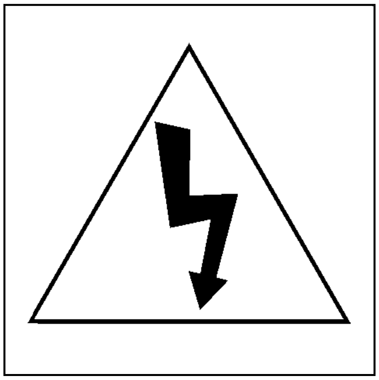
Schematics RPO Code List

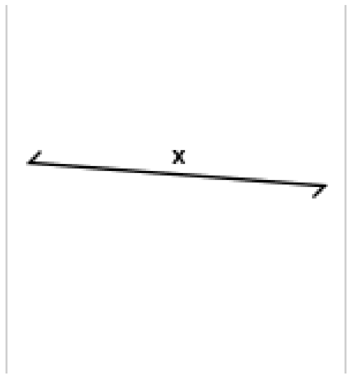
RPO	Option Name
A2X	ADJUSTER DRIVER SEAT-8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
AL9	LUMBAR DRIVER-SEAT, POWER, 2 WAY

RPO	Option Name
AT9	LUMBAR PASSENGER-SEAT, POWER, 2 WAY
C91	LAMP-INTR, ROOF, COURTESY
C9I	SWITCH-ROLL OVER SENSING
CAC	ROOF-SUN, SINGLE GLASS, INR SLIDING, MAN SUNSHADE
CJ2	HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
DD8	MIRROR I/S R/V-LT SENSITIVE
DEG	SUNSHADE-DRIVER, MIRROR, COVER, ILLUM, SLIDING, PASS, MIRROR, COVER, ILLUM, SLIDING
G93	AXLE-FRT ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
G94	AXLE-RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
HS1	ALERT-SAFETY HAPTIC SEAT
JL1	BRK APL CTRL FEATURE-INTEGRATED TRAILER BRAKE
K7A	CHARGER FRT ROW-PORTABLE DEVICE, INDUCTIVE, SINGLE
KA1	HEATER SEAT FRT-DRVR and PASS (DNU NEXT NEW MAJOR)
KC9	RECEPTACLE PUBX-ELECTRICAL, 110 VOLT
KCA	RECEPTACLE PUBX-ELECTRICAL, 230 VOLT
KI3	STEERING WHEEL HEAT-AUTOMATIC
KI6	RECEPTCL FRT CNSL RR-ELECTRICAL, 110 VOLT
KI7	RECEPTCL FRT CNSL RR-ELECTRICAL, 230 VOLT
KSG	CRUISE CONTROL-AUTOMATIC, ADAPTIVE, WITH STOP/GO
KU9	VENTILATED SEAT FRT-DRVR and PASS
NP0	TRANSFER CASE-ACTIVE, SINGLE SPEED,SWITCH ACTIVATED,ALUM
NQH	TRANSFER CASE-ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
S0Y	ACCESSORY-LAMPS - CARGO AREA
T40	LAMP FRT FOG-FRT FOG, LED
U1D	INDICATOR-TRAILER INFORMATION
U2K	DIGITAL AUDIO SYSTEM-S-BAND
U2Q	DIGITAL AUDIO SYSTEM-INTEGRATED TYPE DAB/DAB+/DMB-R
UBI	RECPT USB FLR CNSL R-DUAL, CHARGE
UBP	RECPT USB FLR CNSL R-SINGLE, CHARGE
UDA	COMMUNICATION SYSTEM-VEHICLE, DEACTIVATED
UE1	COMMUNICATION SYSTEM-VEHICLE, ONSTAR
UER	COMM SYS REGULATORY-VEHICLE, EMERGENCY CALL
UIT	ALERT DISPLAY-REFLECTED, SINGLE COLOR
UQA	SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED AMPLIFIER
URC	SWITCH-FLEXRIDE MODE SYSTEM
UV2	VISION-360 VIEW, MONO, HD DIGITAL
UV6	HEAD UP DISPLAY-WINDSHIELD
UVB	VISION-REAR VIEW, MONO, HD DIGITAL
UXA	VISION UNDERBODY-FORWARD AND REARWARD FACING
Z82	TRAILER PROVISIONS-SPECIAL EQUIPMENT, H.D.

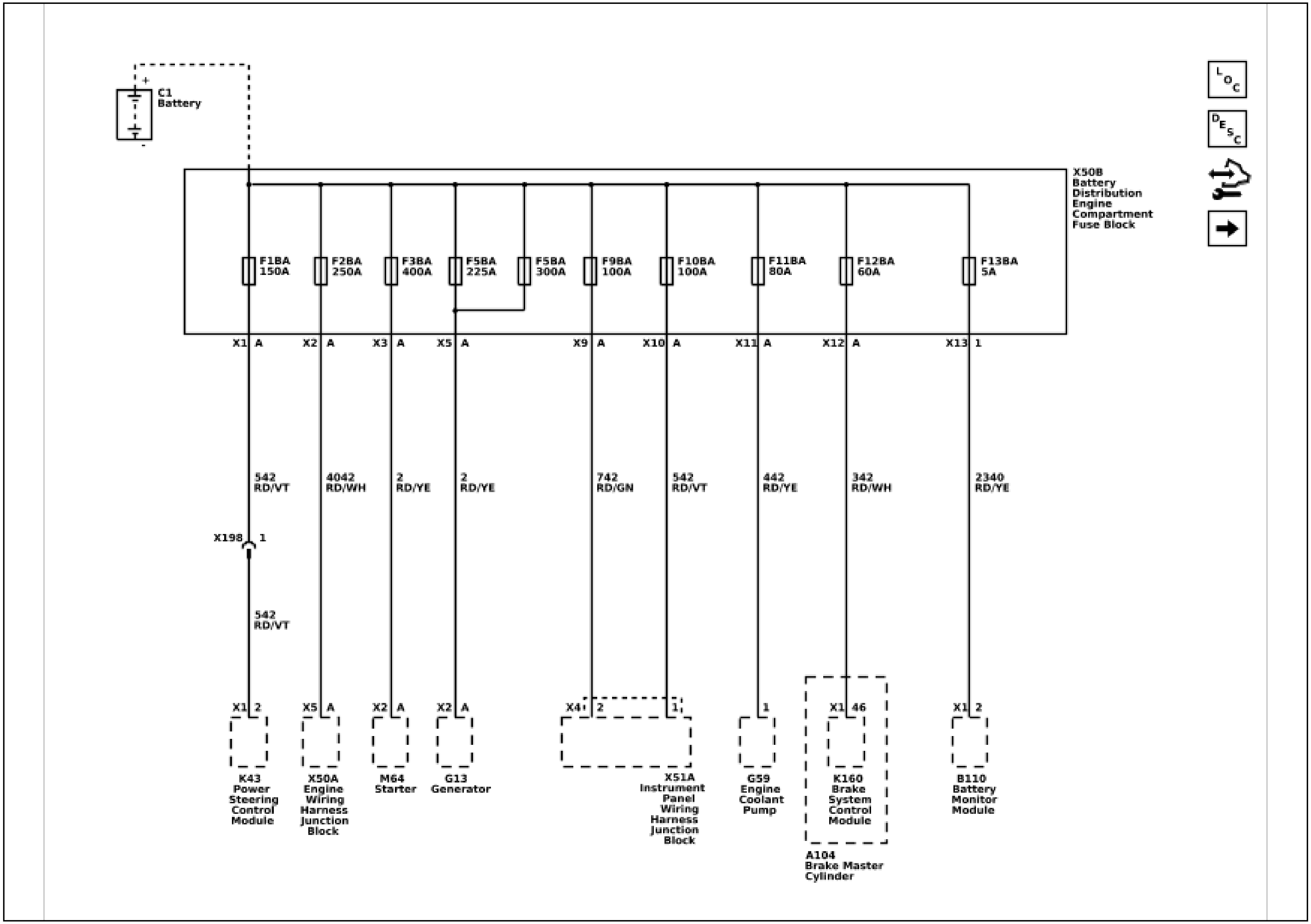
Master Electrical Schematic Icons

Master Electrical Schematic Icons

Icon	Icon Definition
 19386	***Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.***
 296943	***Warning: To help avoid personal injury, always treat the accessory power receptacle, accessory DC/AC power inverter module, AC circuit wires, and connectors as if AC high-voltage is present.***

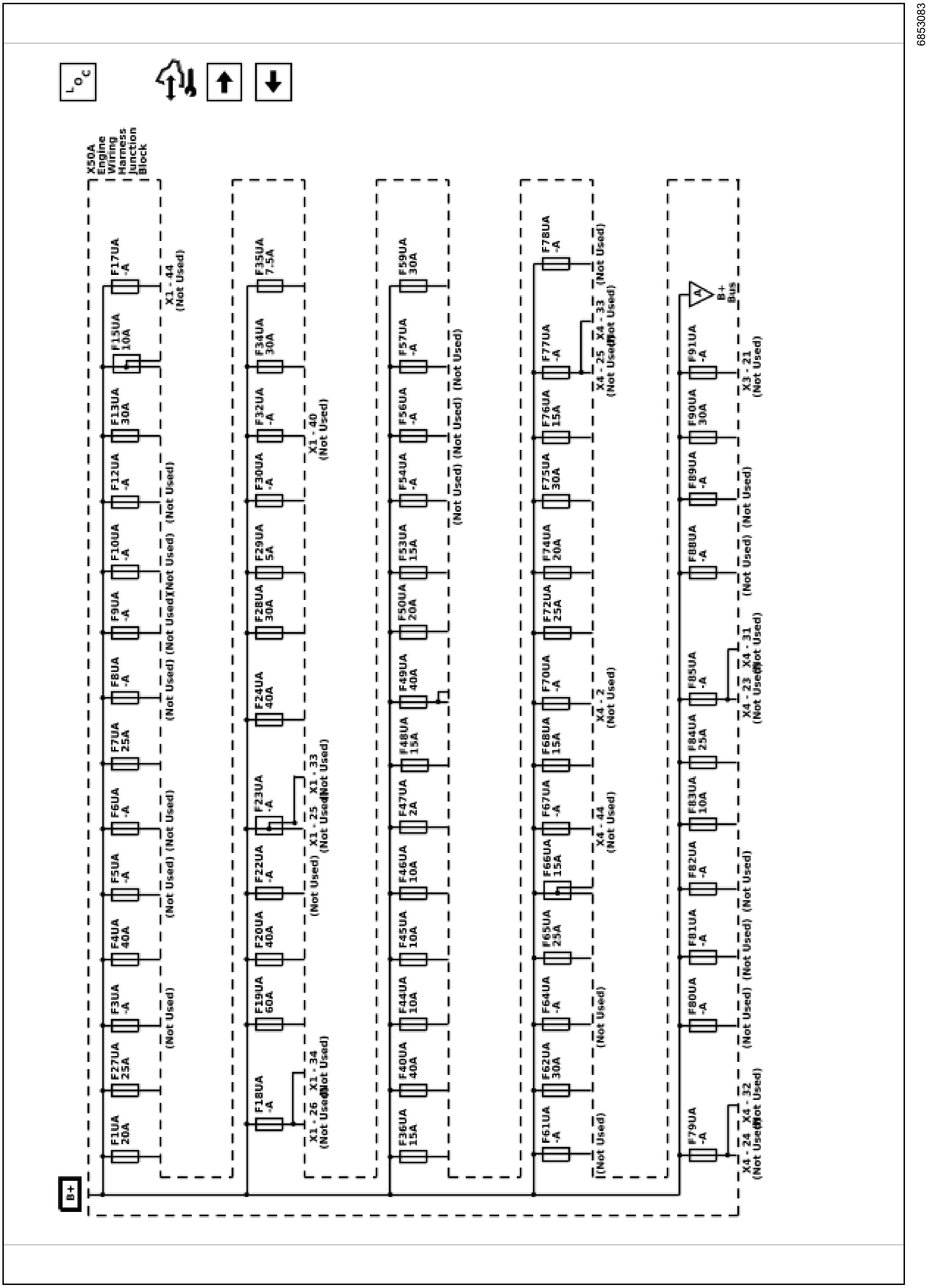
Icon	Icon Definition
⚠ 296880	**SIR Schematics:** ***Warning: The connector at the Inflatable Restraint Module cannot be disconnected or removed without damage to the module. If the connector is removed from the module, the entire module with harness must be replaced.***
 902886	**Note:** Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference.In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown : • The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in).

Power Distribution Schematics (B+ Bus - X50B Battery Distribution Engine Compartment Fuse Block)

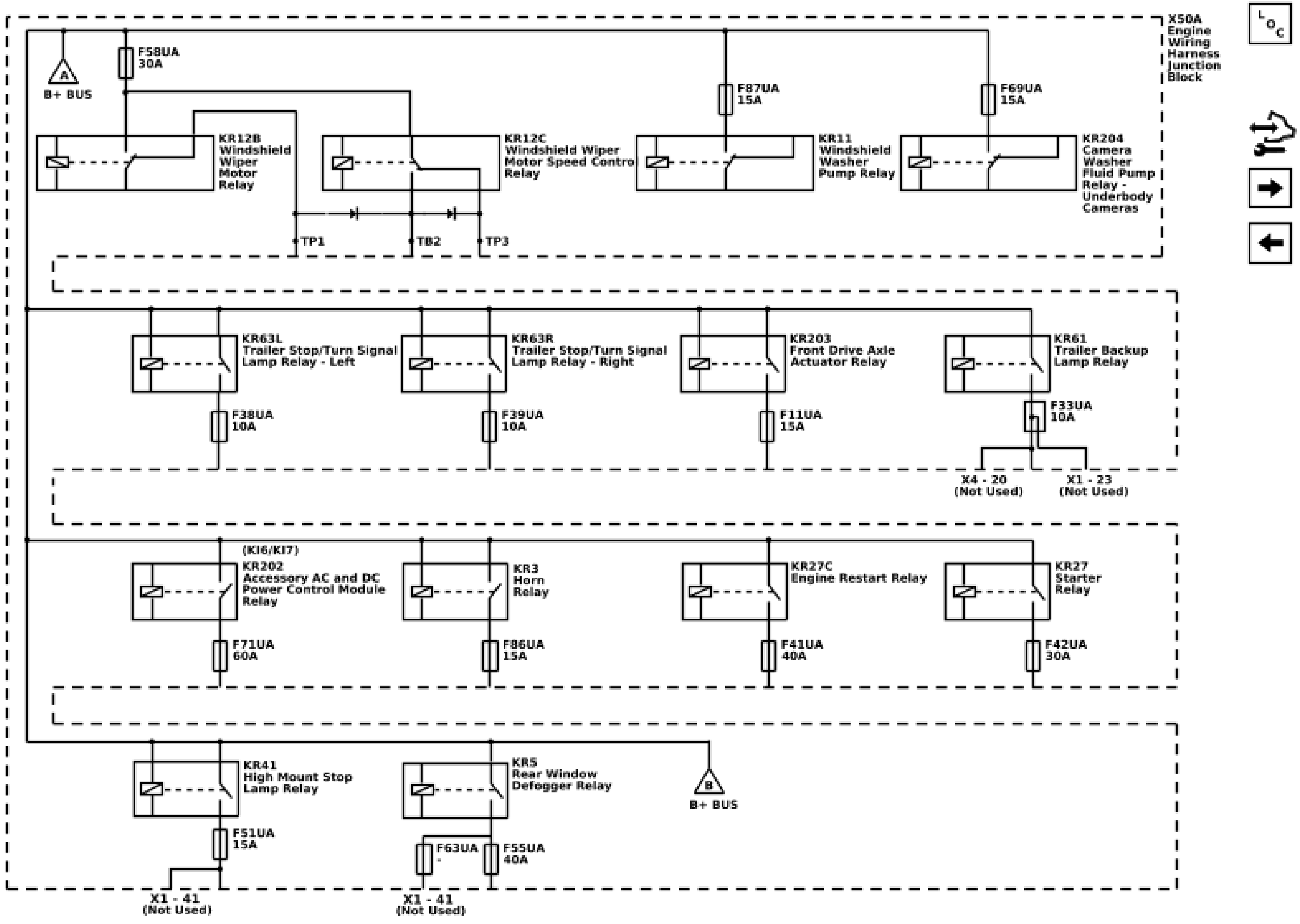

C1 Battery
+
-
X50B Battery Distribution Engine Compartment Fuse Block
F1BA 150A
F2BA 250A
F3BA 400A
F5BA 225A
F5BA 300A
F9BA 100A
F10BA 100A
F11BA 80A
F12BA 60A
F13BA 5A
X1 A
X2 A
X3 A
X5 A
X9 A
X10 A
X11 A
X12 A
X13 1
542 RD/VT
4042 RD/WH
2 RD/YE
2 RD/YE
742 RD/GN
542 RD/VT
442 RD/YE
342 RD/WH
2340 RD/YE
X198 1
542 RD/VT
X1 2
X5 A
X2 A
X2 A
X4 2
1
1
X1 46
X1 2
K43 Power Steering Control Module
X50A Engine Wiring Harness Junction Block
M64 Starter
G13 Generator
X51A Instrument Panel Wiring Harness Junction Block
G59 Engine Coolant Pump
K160 Brake System Control Module
A104 Brake Master Cylinder
B110 Battery Monitor Module
LOC
DESC

6853082

Power Distribution Schematics (B+ Bus - X50A Engine Wiring Harness Junction Block - Fuses)


6853083
X50A Engine Wiring Harness Junction Block
B+
F1UA 20A
F27UA 25A
F3UA -A
F4UA 40A
F5UA -A
F6UA -A
F7UA 25A
F8UA -A
F9UA -A
F10UA -A
F12UA -A
F13UA 30A
F15UA 10A
F17UA -A
X1 - 44 (Not Used)
(Not Used)
F18UA -A
X1 - 26 (Not Used)
X1 - 34 (Not Used)
F19UA 60A
F20UA 40A
F22UA -A
F23UA -A
X1 - 25 (Not Used)
X1 - 33 (Not Used)
F24UA 40A
F28UA 30A
F29UA 5A
F30UA -A
F32UA -A
X1 - 40 (Not Used)
F34UA 30A
F35UA 7.5A
F36UA 15A
F40UA 40A
F44UA 10A
F45UA 10A
F46UA 10A
F47UA 2A
F48UA 15A
F49UA 40A
F50UA 20A
F53UA 15A
F54UA -A
F56UA -A
F57UA -A
F59UA 30A
F61UA -A
F62UA 30A
F64UA -A
F65UA 25A
F66UA 15A
X4 - 44 (Not Used)
F67UA -A
F68UA 15A
F70UA -A
X4 - 2 (Not Used)
F72UA 25A
F74UA 20A
F75UA 30A
F76UA 15A
F77UA -A
X4 - 25 (Not Used)
X4 - 33 (Not Used)
F78UA -A
F79UA -A
X4 - 24 (Not Used)
X4 - 32 (Not Used)
F80UA -A
F81UA -A
F82UA -A
F83UA 10A
F84UA 25A
F85UA -A
X4 - 23 (Not Used)
X4 - 31 (Not Used)
F88UA -A
F89UA -A
F90UA 30A
F91UA -A
X3 - 21 (Not Used)
A
B+ Bus

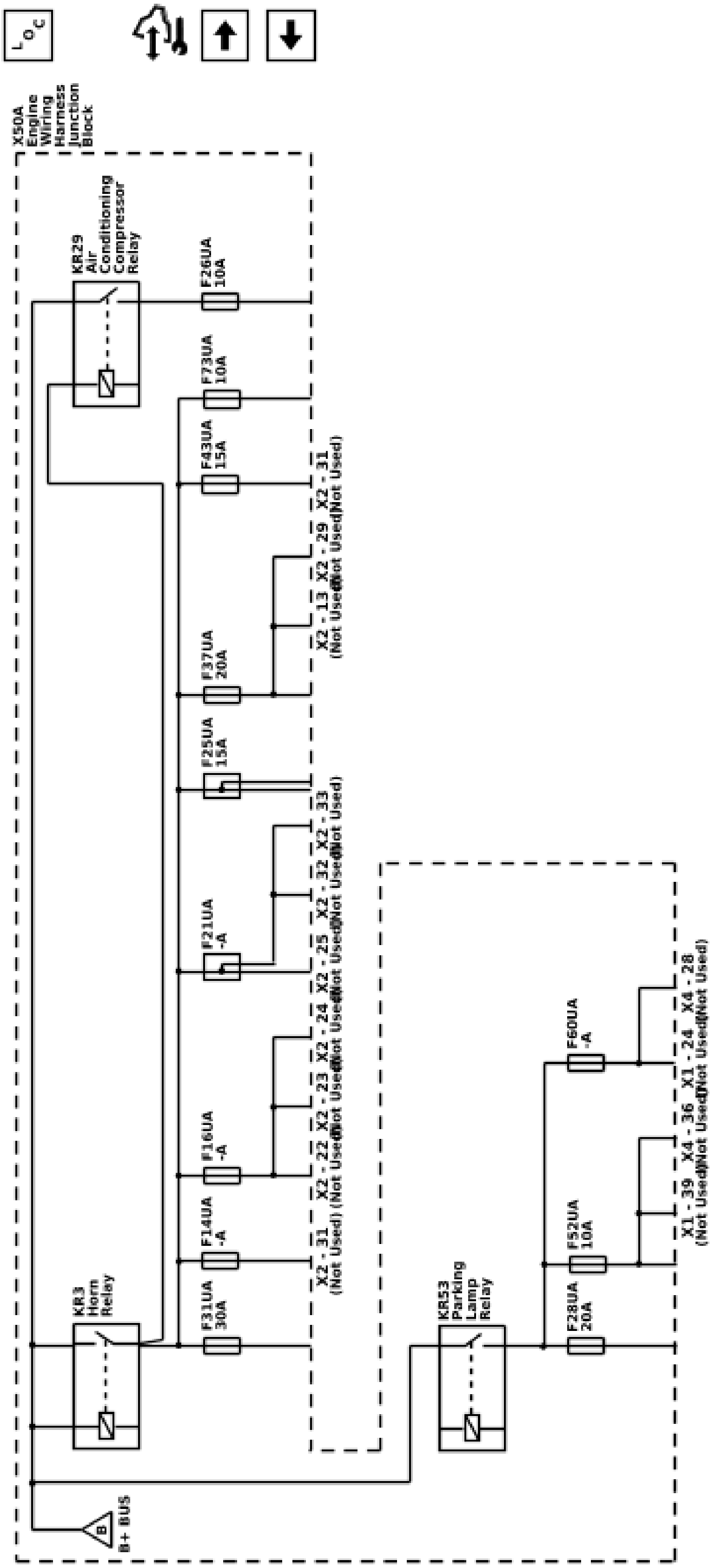
Power Distribution Schematics (B+ Bus - X50A Engine Wiring Harness Junction Block - Relays 1 of 2)


X50A Engine Wiring Harness Junction Block
A
B+ BUS
F58UA 30A
F87UA 15A
F69UA 15A
KR12B Windshield Wiper Motor Relay
KR12C Windshield Wiper Motor Speed Contro Relay
KR11 Windshield Washer Pump Relay
KR204 Camera Washer Fluid Pump Relay - Underbody Cameras
TP1
TB2
TP3
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR203 Front Drive Axle Actuator Relay
KR61 Trailer Backup Lamp Relay
F38UA 10A
F39UA 10A
F11UA 15A
F33UA 10A
X4 - 20 (Not Used)
X1 - 23 (Not Used)
(KI6/KI7)
KR202 Accessory AC and DC Power Control Module Relay
KR3 Horn Relay
KR27C Engine Restart Relay
KR27 Starter Relay
F71UA 60A
F86UA 15A
F41UA 40A
F42UA 30A
KR41 High Mount Stop Lamp Relay
KR5 Rear Window Defogger Relay
B
B+ BUS
F51UA 15A
F63UA -
F55UA 40A
X1 - 41 (Not Used)
X1 - 41 (Not Used)
L O C

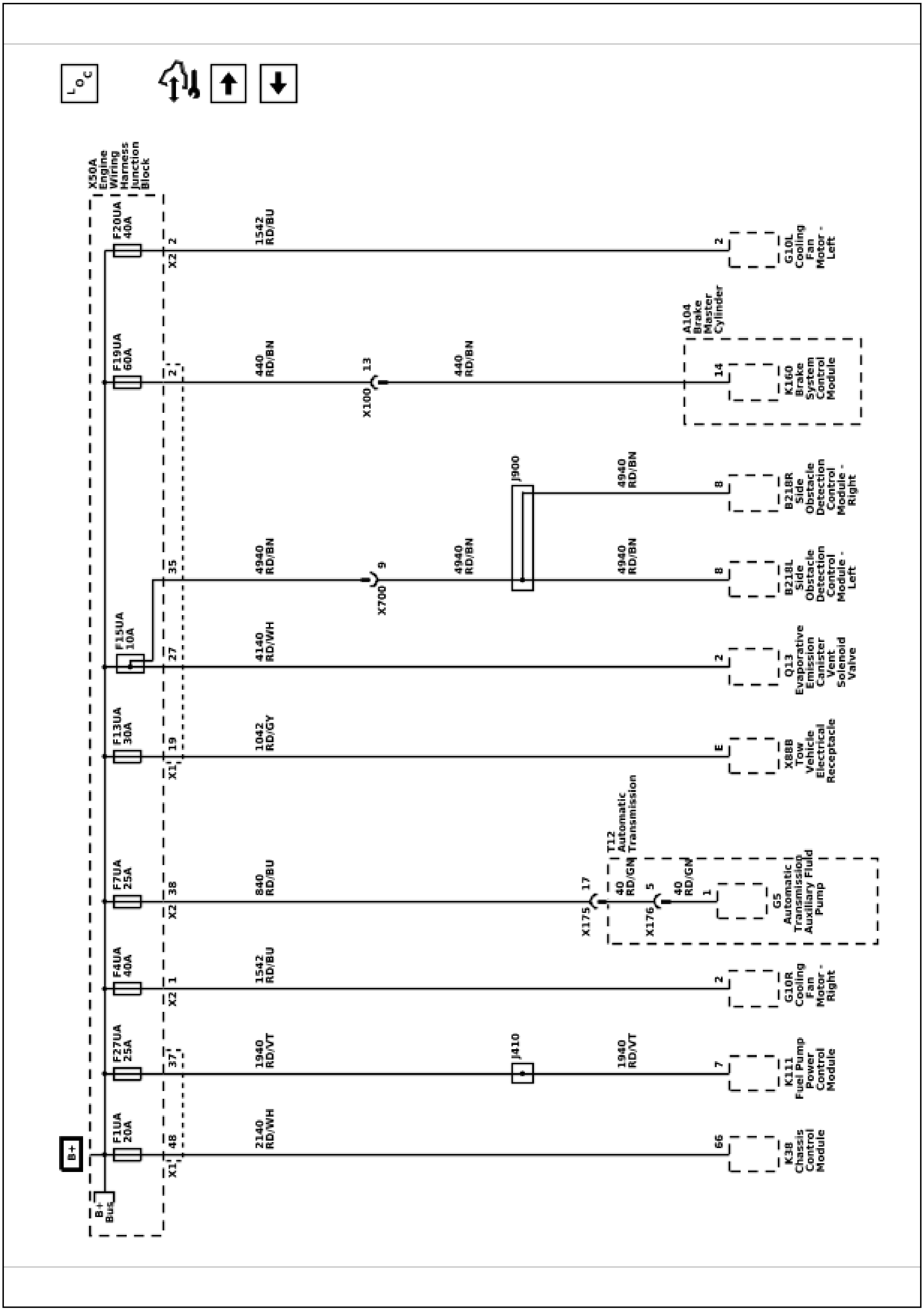
6853084

6853085

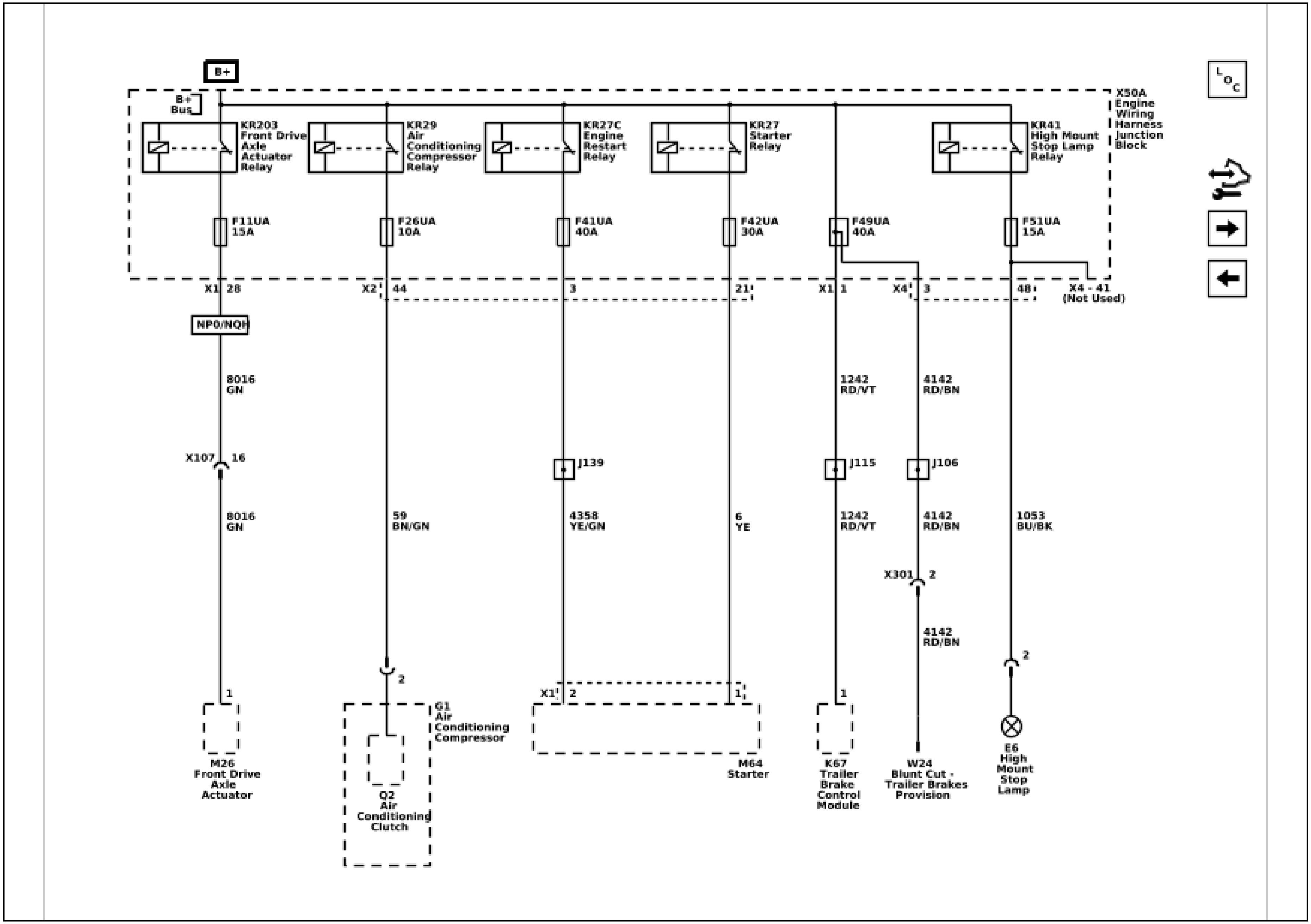
Power Distribution Schematics (B+ Bus - X50A Engine Wiring Harness Junction Block - Relays 2 of 2)


X50A Engine Wiring Harness Junction Block
KR29 Air Conditioning Compressor Relay
F26UA 10A
F73UA 10A
F43UA 15A
X2 - 31 (Not Used)
X2 - 29 (Not Used)
X2 - 13 (Not Used)
F37UA 20A
F25UA 15A
X2 - 33 (Not Used)
X2 - 32 (Not Used)
X2 - 25 (Not Used)
F21UA -A
X2 - 24 (Not Used)
X2 - 23 (Not Used)
X2 - 22 (Not Used)
F16UA -A
X2 - 31 (Not Used)
F14UA -A
F31UA 30A
KR3 Horn Relay
KR53 Parking Lamp Relay
F28UA 20A
F52UA 10A
F60UA -A
X4 - 28 (Not Used)
X1 - 24 (Not Used)
X4 - 36 (Not Used)
X1 - 39 (Not Used)
B
B+ BUS

Power Distribution Schematics (F1UA, F27UA, F4UA, F7UA, F13UA, F15UA, F19UA,and F20UA Fuses)

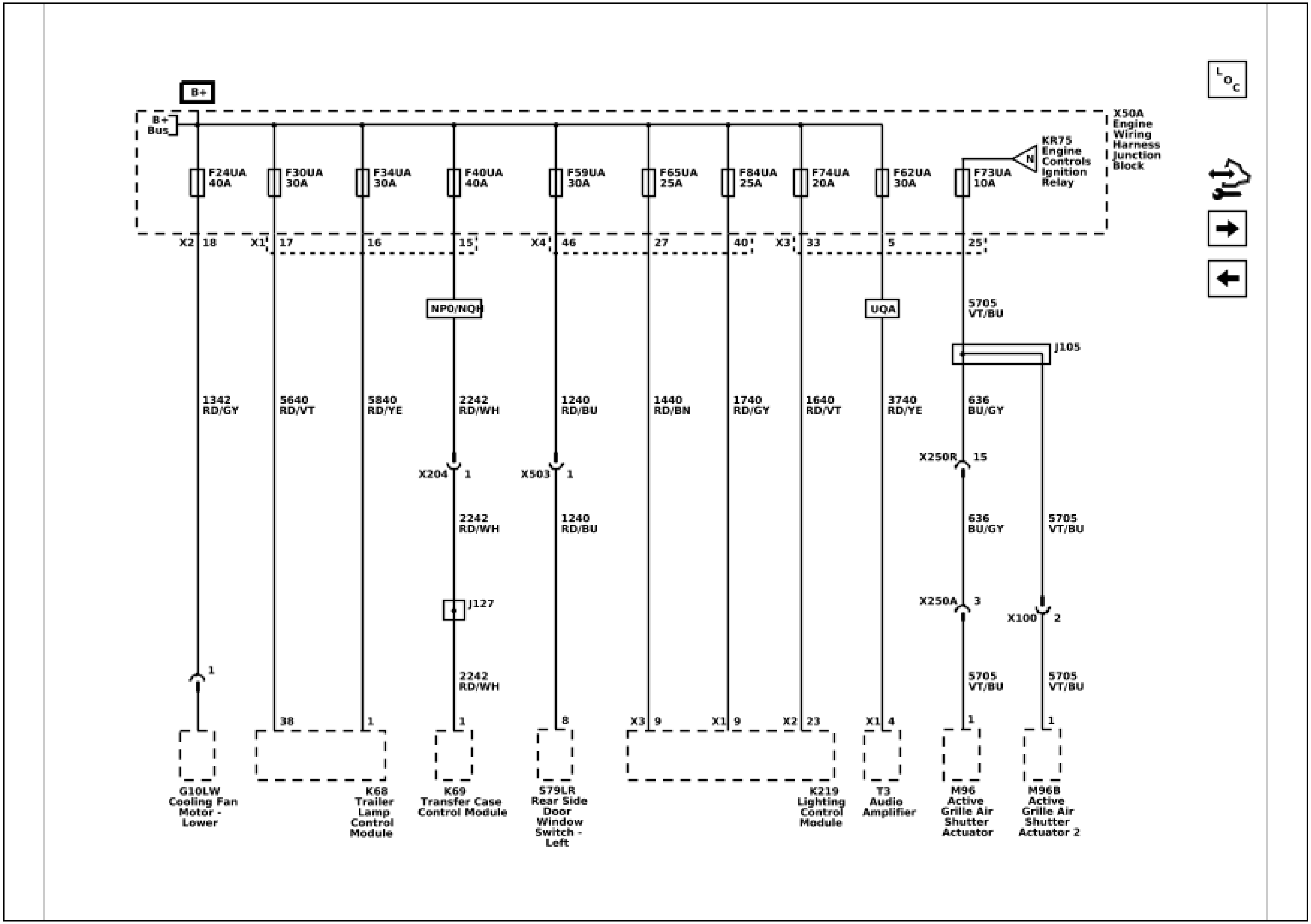

6853086
B+
B+ Bus
X50A Engine Wiring Harness Junction Block
F1UA 20A
X1 48
2140 RD/WH
66
K38 Chassis Control Module
F27UA 25A
37
1940 RD/VT
J410
1940 RD/VT
7
K111 Fuel Pump Power Control Module
F4UA 40A
X2 1
1542 RD/BU
2
G10R Cooling Fan Motor - Right
F7UA 25A
X2 38
840 RD/BU
X175 17
40 RD/GN
X176 5
40 RD/GN
1
T12 Automatic Transmission
G5 Automatic Transmission Auxiliary Fluid Pump
F13UA 30A
X1 19
1042 RD/GY
E
X88B Tow Vehicle Electrical Receptacle
F15UA 10A
27
4140 RD/WH
2
Q13 Evaporative Emission Canister Vent Solenoid Valve
35
4940 RD/BN
X700 9
4940 RD/BN
J900
4940 RD/BN
8
B218L Side Obstacle Detection Control Module - Left
4940 RD/BN
8
B218R Side Obstacle Detection Control Module - Right
F19UA 60A
2
440 RD/BN
X100 13
440 RD/BN
14
A104 Brake Master Cylinder
K160 Brake System Control Module
F20UA 40A
X2 2
1542 RD/BU
2
G10L Cooling Fan Motor - Left

Power Distribution Schematics (F11UA, F26UA, F41UA, F42UA, F49UA and F51UA Fuses)


B+
B+ Bus
X50A Engine Wiring Harness Junction Block
KR203 Front Drive Axle Actuator Relay
KR29 Air Conditioning Compressor Relay
KR27C Engine Restart Relay
KR27 Starter Relay
KR41 High Mount Stop Lamp Relay
F11UA 15A
F26UA 10A
F41UA 40A
F42UA 30A
F49UA 40A
F51UA 15A
X1 28
X2 44
3
21
X1 1
X4 3
48
X4 - 41 (Not Used)
NP0/NQH
8016 GN
X107 16
8016 GN
59 BN/GN
J139
4358 YE/GN
6 YE
1242 RD/VT
J115
1242 RD/VT
4142 RD/BN
J106
4142 RD/BN
X301 2
4142 RD/BN
1053 BU/BK
2
1
M26 Front Drive Axle Actuator
2
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
X1 2
1
M64 Starter
1
K67 Trailer Brake Control Module
W24 Blunt Cut - Trailer Brakes Provision
2
E6 High Mount Stop Lamp

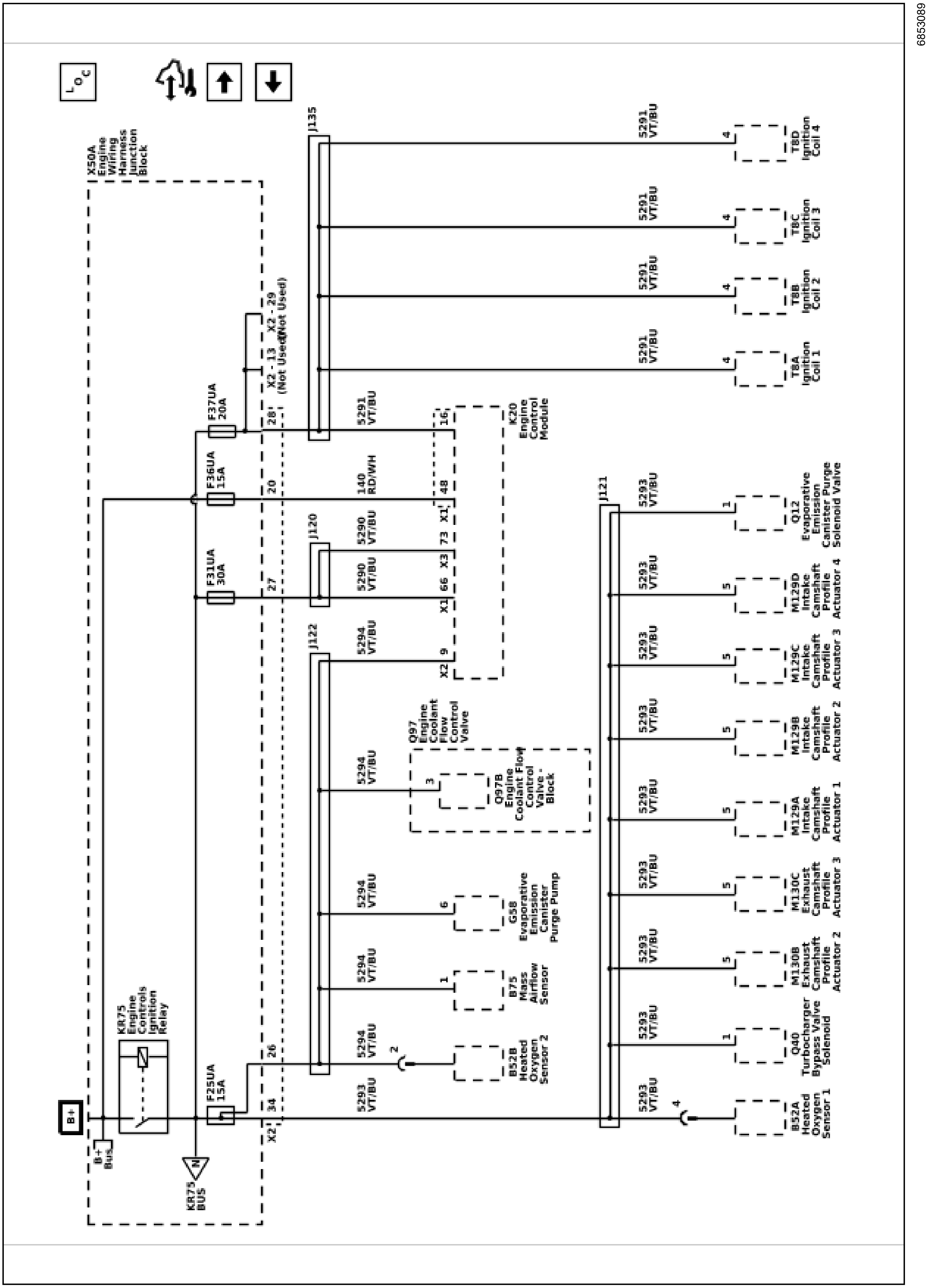
6853087

Power Distribution Schematics (F24UA, F30UA, F34UA, F40UA, F59UA, F62UA, F65UA, F73UA, F74UA, and F84UA Fuses)

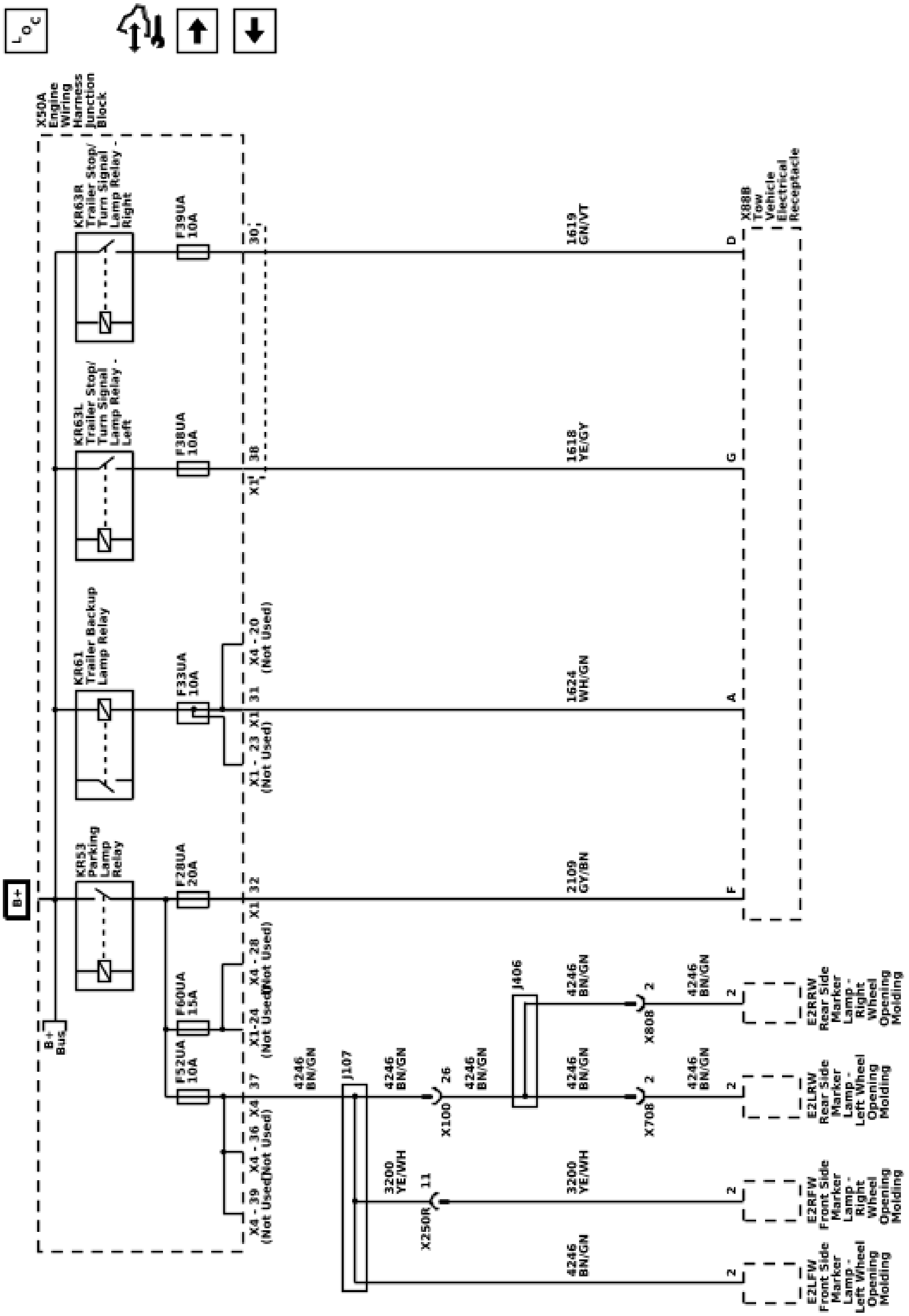

B+
B+ Bus
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
N
F24UA 40A
F30UA 30A
F34UA 30A
F40UA 40A
F59UA 30A
F65UA 25A
F84UA 25A
F74UA 20A
F62UA 30A
F73UA 10A
X2 18
X1 17
16
15
X4 46
27
40
X3 33
5
25
NP0/NQH
UQA
5705 VT/BU
J105
1342 RD/GY
5640 RD/VT
5840 RD/YE
2242 RD/WH
1240 RD/BU
1440 RD/BN
1740 RD/GY
1640 RD/VT
3740 RD/YE
636 BU/GY
X250R 15
X204 1
X503 1
2242 RD/WH
1240 RD/BU
636 BU/GY
5705 VT/BU
J127
X250A 3
X100 2
1
2242 RD/WH
5705 VT/BU
5705 VT/BU
38
1
1
8
X3 9
X1 9
X2 23
X1 4
1
1
G10LW Cooling Fan Motor - Lower
K68 Trailer Lamp Control Module
K69 Transfer Case Control Module
S79LR Rear Side Door Window Switch - Left
K219 Lighting Control Module
T3 Audio Amplifier
M96 Active Grille Air Shutter Actuator
M96B Active Grille Air Shutter Actuator 2
L O C

6853088

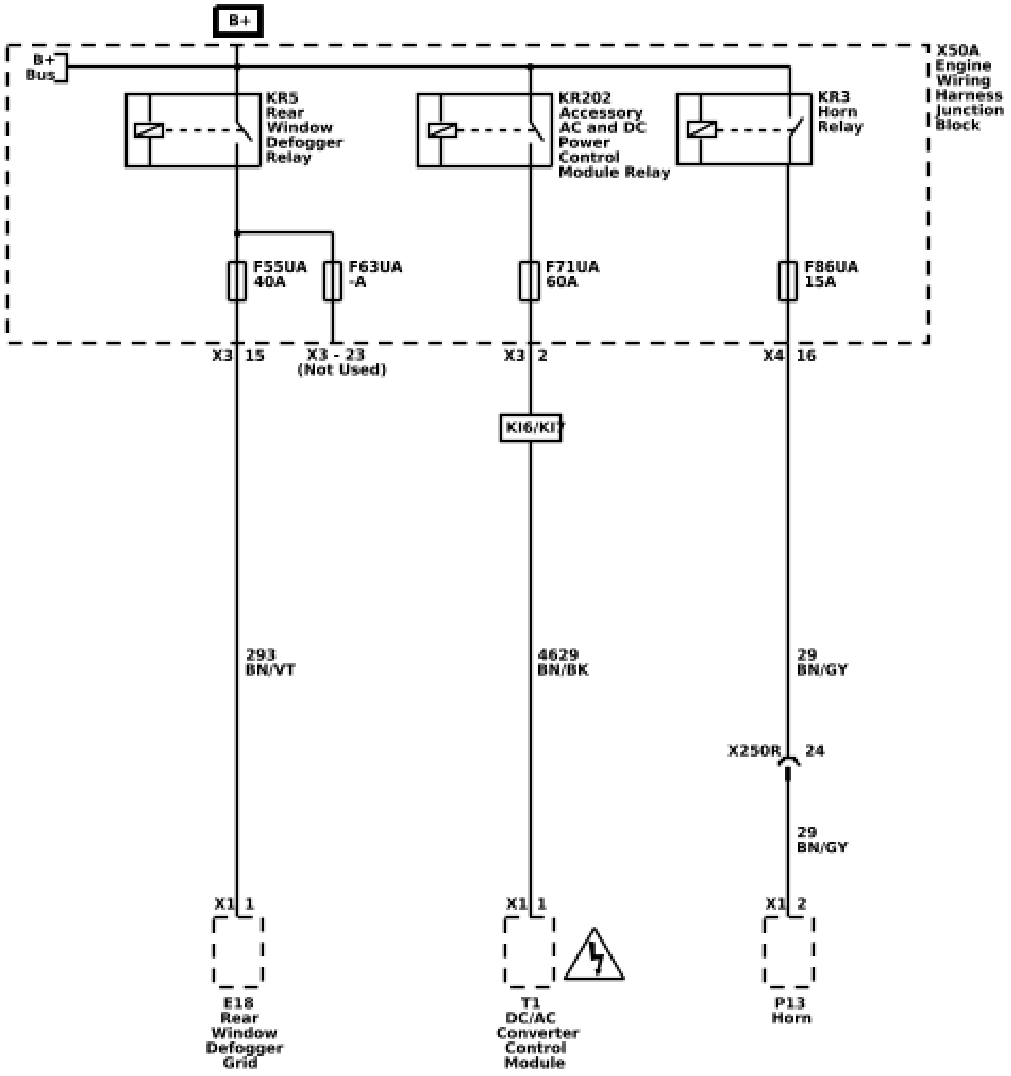
Power Distribution Schematics (F25UA, F31UA, F36UA, and F37UA)


6853089
X50A Engine Wiring Harness Junction Block
B+
B+ Bus
KR75 Engine Controls Ignition Relay
KR75 BUS
F25UA 15A
F31UA 30A
F36UA 15A
F37UA 20A
X2 34
26
27
20
28
X2 - 13 (Not Used)
X2 - 29 (Not Used)
J135
J120
J122
J121
5291 VT/BU
140 RD/WH
5290 VT/BU
5294 VT/BU
5293 VT/BU
K20 Engine Control Module
X1 16
X1 48
X3 73
X1 66
X2 9
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
4
Q97 Engine Coolant Flow Control Valve
3
Q97B Engine Coolant Flow Control Valve - Block
6
G38 Evaporative Emission Canister Purge Pump
1
B75 Mass Airflow Sensor
2
B52B Heated Oxygen Sensor 2
Q12 Evaporative Emission Canister Purge Solenoid Valve
5
M129D Intake Camshaft Profile Actuator 4
M129C Intake Camshaft Profile Actuator 3
M129B Intake Camshaft Profile Actuator 2
M129A Intake Camshaft Profile Actuator 1
M130C Exhaust Camshaft Profile Actuator 3
M130B Exhaust Camshaft Profile Actuator 2
Q40 Turbocharger Bypass Valve Solenoid
B52A Heated Oxygen Sensor 1
L O C

Power Distribution Schematics (F28UA, F33UA, F38UA, F39UA, F52UA, and F60UA Fuses)

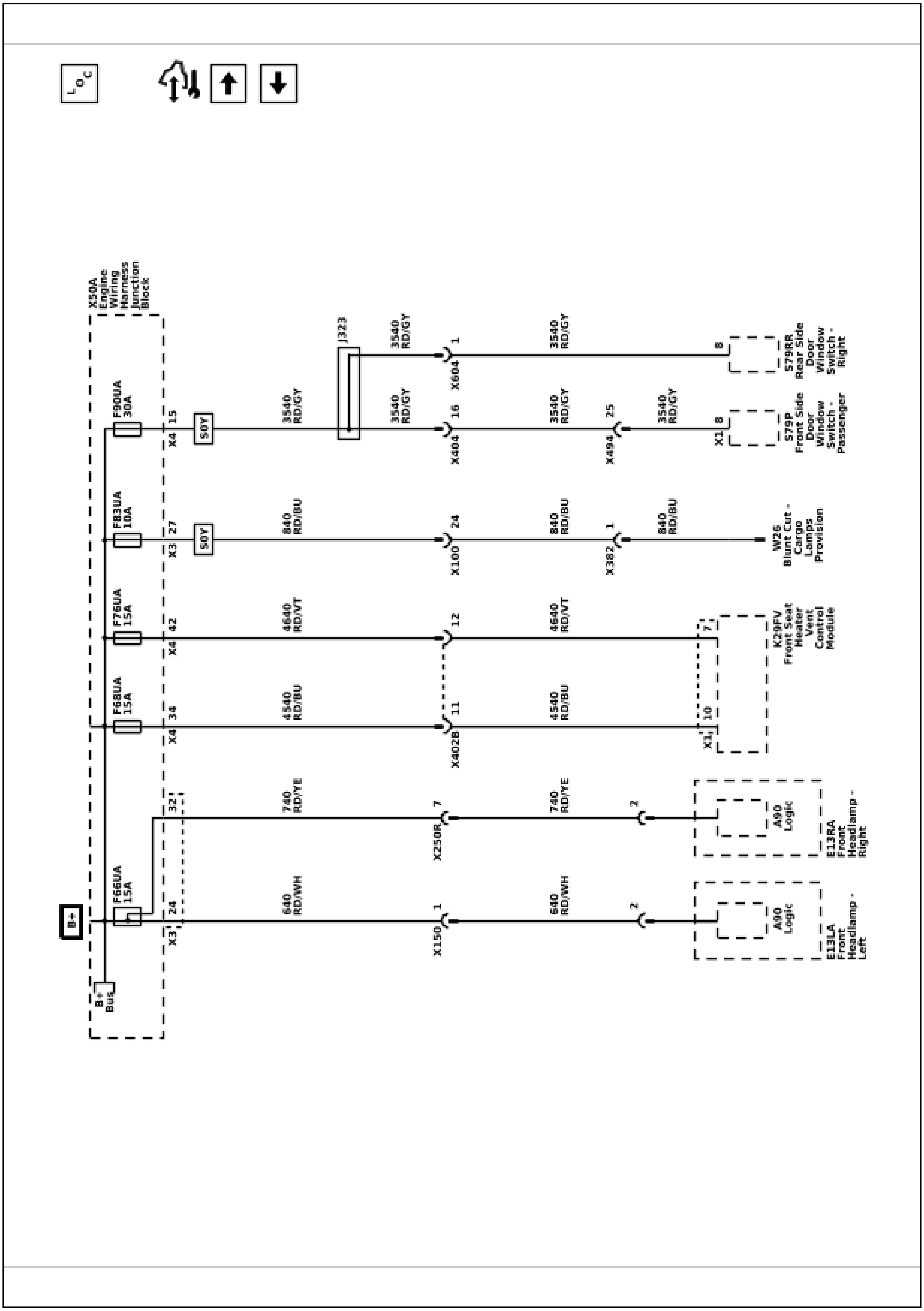

6853090
X50A Engine Wiring Harness Junction Block
B+
B+ Bus
KR53 Parking Lamp Relay
KR61 Trailer Backup Lamp Relay
KR63L Trailer Stop/ Turn Signal Lamp Relay - Left
KR63R Trailer Stop/ Turn Signal Lamp Relay - Right
F28UA 20A
F33UA 10A
F38UA 10A
F39UA 10A
F52UA 10A
F60UA 15A
X1 32
X1 31
X1 - 23 (Not Used)
X4 - 20 (Not Used)
X1 38
30
X1-24 (Not Used)
X4 - 28 (Not Used)
X4 37
X4 - 36 (Not Used)
X4 - 39 (Not Used)
2109 GY/BN
1624 WH/GN
1618 YE/GY
1619 GN/VT
F
A
G
D
X88B Tow Vehicle Electrical Receptacle
4246 BN/GN
J107
X100
26
3200 YE/WH
11
X250R
J406
X708
X808
2
E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding
E2LRW Rear Side Marker Lamp - Left Wheel Opening Molding
E2RFW Front Side Marker Lamp - Right Wheel Opening Molding
E2LFW Front Side Marker Lamp - Left Wheel Opening Molding

Power Distribution Schematics (F55UA, F63UA, F71UA, and F86UA Fuses)


B+
B+ Bus
X50A Engine Wiring Harness Junction Block
KR5 Rear Window Defogger Relay
KR202 Accessory AC and DC Power Control Module Relay
KR3 Horn Relay
F55UA 40A
F63UA -A
F71UA 60A
F86UA 15A
X3 15
X3 - 23 (Not Used)
X3 2
X4 16
KI6/KI7
293 BN/VT
4629 BN/BK
29 BN/GY
X250R 24
29 BN/GY
X1 1
X1 1
X1 2
E18 Rear Window Defogger Grid
T1 DC/AC Converter Control Module
P13 Horn

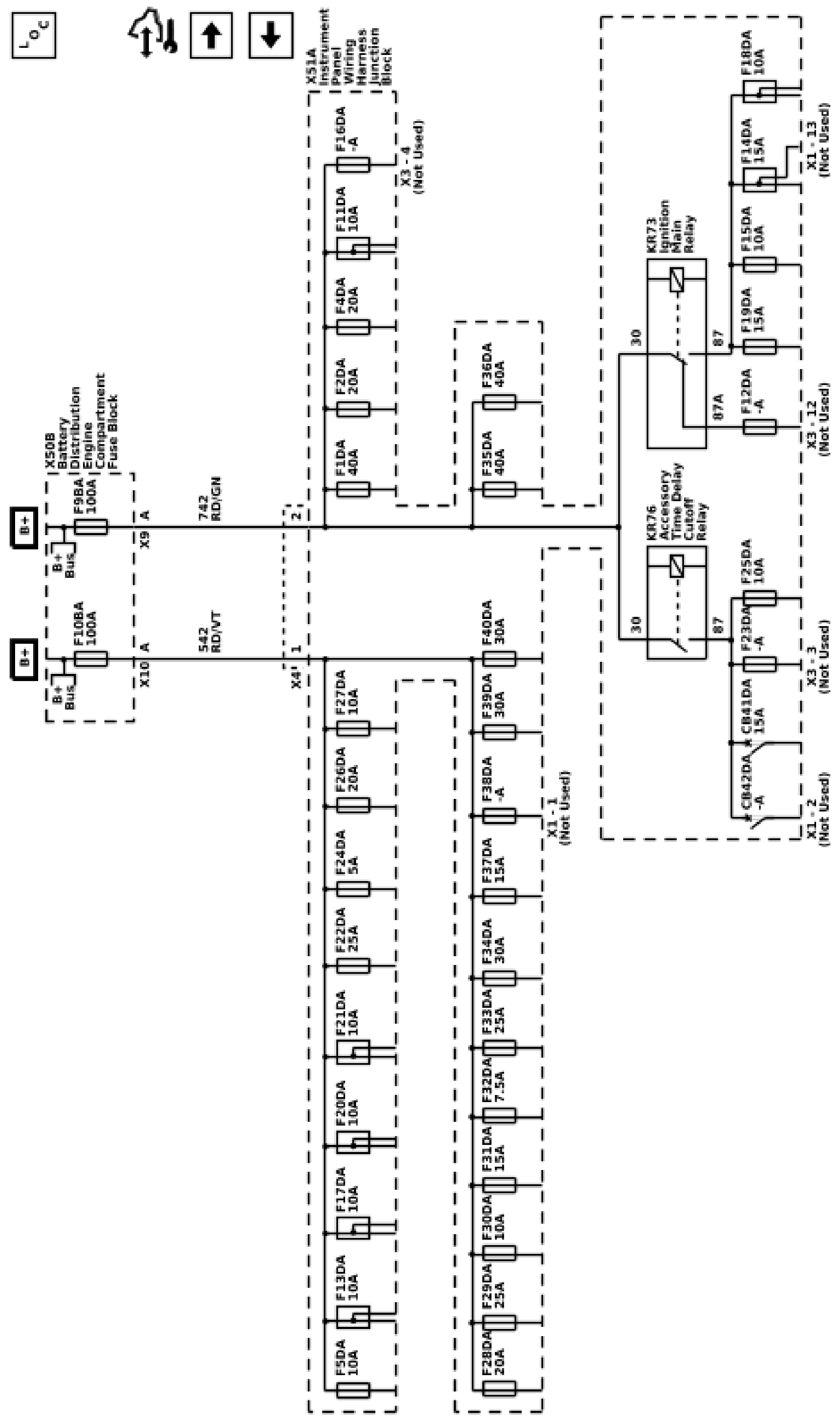
6853091

Power Distribution Schematics (F66UA, F68UA, F76UA, F83UA and F90UA Fuses)

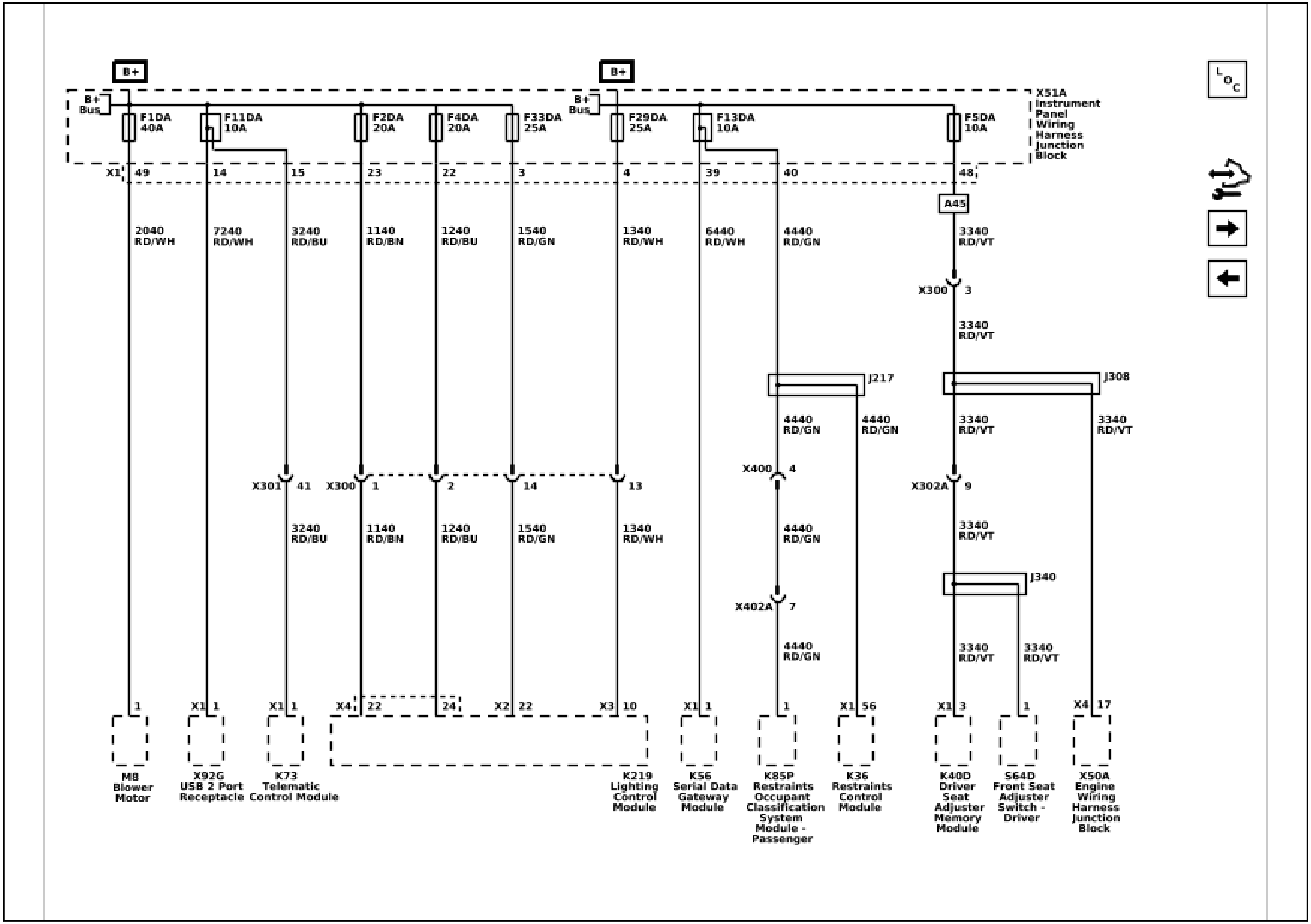

B+
B+ Bus
X50A Engine Wiring Harness Junction Block
F66UA 15A
F68UA 15A
F76UA 15A
F83UA 10A
F90UA 30A
X3 24
X3 32
X4 34
X4 42
X3 27
X4 15
S0Y
S0Y
640 RD/WH
740 RD/YE
4540 RD/BU
4640 RD/VT
840 RD/BU
3540 RD/GY
J323
X150 1
X250R 7
X402B 11
12
X100 24
X404 16
X604 1
2
2
X1 10
7
X382 1
X494 25
X1 8
8
E13LA Front Headlamp - Left
A90 Logic
E13RA Front Headlamp - Right
A90 Logic
K29FV Front Seat Heater Vent Control Module
W26 Blunt Cut - Cargo Lamps Provision
S79P Front Side Door Window Switch - Passenger
S79RR Rear Side Door Window Switch - Right

6853092

Power Distribution Schematics (B+ Bus - X51A Instrument Panel Wiring Harness Junction Block)

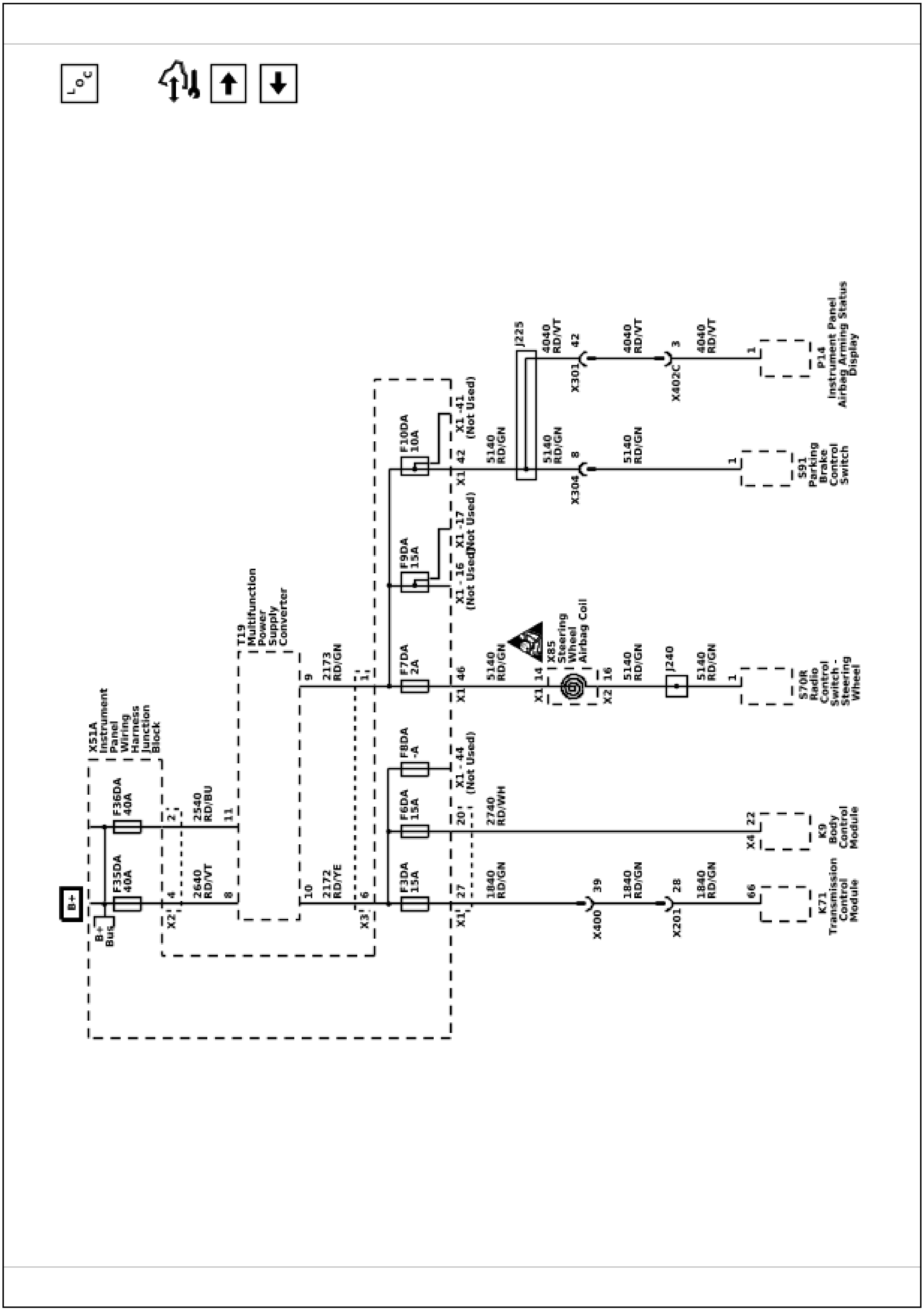

B+
B+ Bus
F9BA 100A
F10BA 100A
X50B Battery Distribution Engine Compartment Fuse Block
X9 A
X10 A
742 RD/GN
542 RD/VT
X4 2
X4 1
X51A Instrument Panel Wiring Harness Junction Block
F16DA -A
X3 - 4 (Not Used)
F11DA 10A
F4DA 20A
F2DA 20A
F1DA 40A
F36DA 40A
F35DA 40A
F40DA 30A
F39DA 30A
F38DA -A
F37DA 15A
F34DA 30A
F33DA 25A
F32DA 7.5A
F31DA 15A
F30DA 10A
F29DA 25A
F28DA 20A
X1 - 1 (Not Used)
F27DA 10A
F26DA 20A
F24DA 5A
F22DA 25A
F21DA 10A
F20DA 10A
F17DA 10A
F13DA 10A
F5DA 10A
KR73 Ignition Main Relay
30
87
87A
KR76 Accessory Time Delay Cutoff Relay
30
87
F18DA 10A
F14DA 15A
X1 - 13 (Not Used)
F15DA 10A
F19DA 15A
F12DA -A
X3 - 12 (Not Used)
F25DA 10A
F23DA -A
X3 - 3 (Not Used)
CB41DA 15A
CB42DA -A
X1 - 2 (Not Used)
6853093

Power Distribution Schematics (F1DA, F2DA, F4DA, F5DA, F11DA, F13DA, F29DA, and F33DA Fuses)


B+
B+ Bus
X51A Instrument Panel Wiring Harness Junction Block
F1DA 40A
F11DA 10A
F2DA 20A
F4DA 20A
F33DA 25A
F29DA 25A
F13DA 10A
F5DA 10A
X1 49
14
15
23
22
3
4
39
40
48
A45
2040 RD/WH
7240 RD/WH
3240 RD/BU
1140 RD/BN
1240 RD/BU
1540 RD/GN
1340 RD/WH
6440 RD/WH
4440 RD/GN
3340 RD/VT
X300 3
J217
J308
X301 41
X300 1
2
14
13
X400 4
X402A 7
X302A 9
J340
1
X1 1
X1 1
X4 22
24
X2 22
X3 10
X1 1
1
X1 56
X1 3
1
X4 17
M8 Blower Motor
X92G USB 2 Port Receptacle
K73 Telematic Control Module
K219 Lighting Control Module
K56 Serial Data Gateway Module
K85P Restraints Occupant Classification System Module - Passenger
K36 Restraints Control Module
K40D Driver Seat Adjuster Memory Module
S64D Front Seat Adjuster Switch - Driver
X50A Engine Wiring Harness Junction Block
L O C

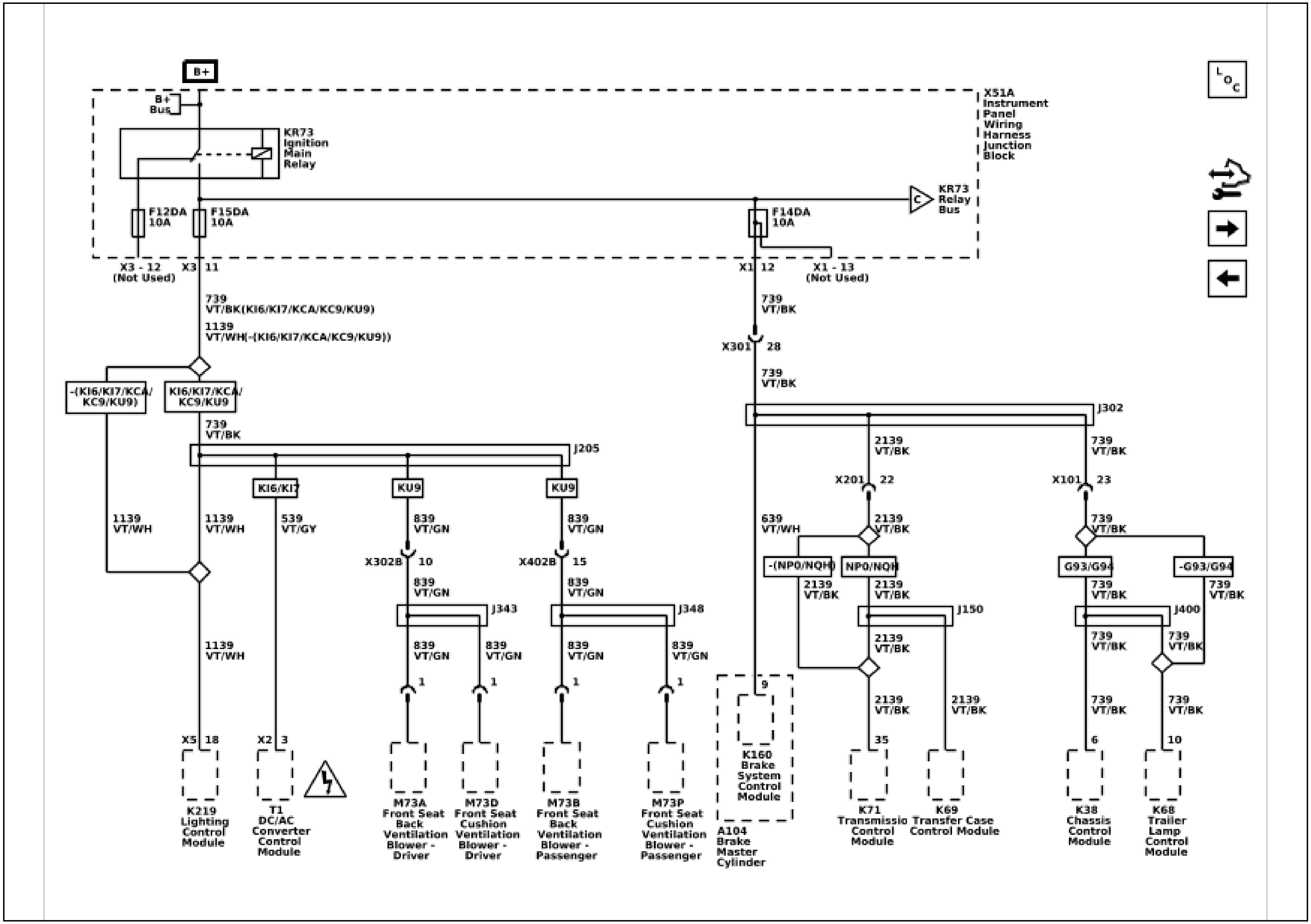
6853094

Power Distribution Schematics (F3DA, F6DA, F7DA, F8DA, F9DA, F10DA, F35DA and F36DA Fuses)


B+
B+ Bus
X51A Instrument Panel Wiring Harness Junction Block
F35DA 40A
F36DA 40A
X2 4
2
2640 RD/VT
2540 RD/BU
8
11
T19 Multifunction Power Supply Converter
10
9
2172 RD/YE
2173 RD/GN
X3 6
1
F3DA 15A
F6DA 15A
F8DA -A
F7DA 2A
F9DA 15A
F10DA 10A
X1 27
20
X1 - 44 (Not Used)
X1 46
X1 - 16 (Not Used)
X1 -17 (Not Used)
X1 42
X1 -41 (Not Used)
1840 RD/GN
2740 RD/WH
5140 RD/GN
J225
4040 RD/VT
X400 39
X201 28
66
K71 Transmission Control Module
X4 22
K9 Body Control Module
X85 Steering Wheel Airbag Coil
X1 14
X2 16
J240
1
S70R Radio Control Switch - Steering Wheel
X304 8
S91 Parking Brake Control Switch
X301 42
X402C 3
P14 Instrument Panel Airbag Arming Status Display

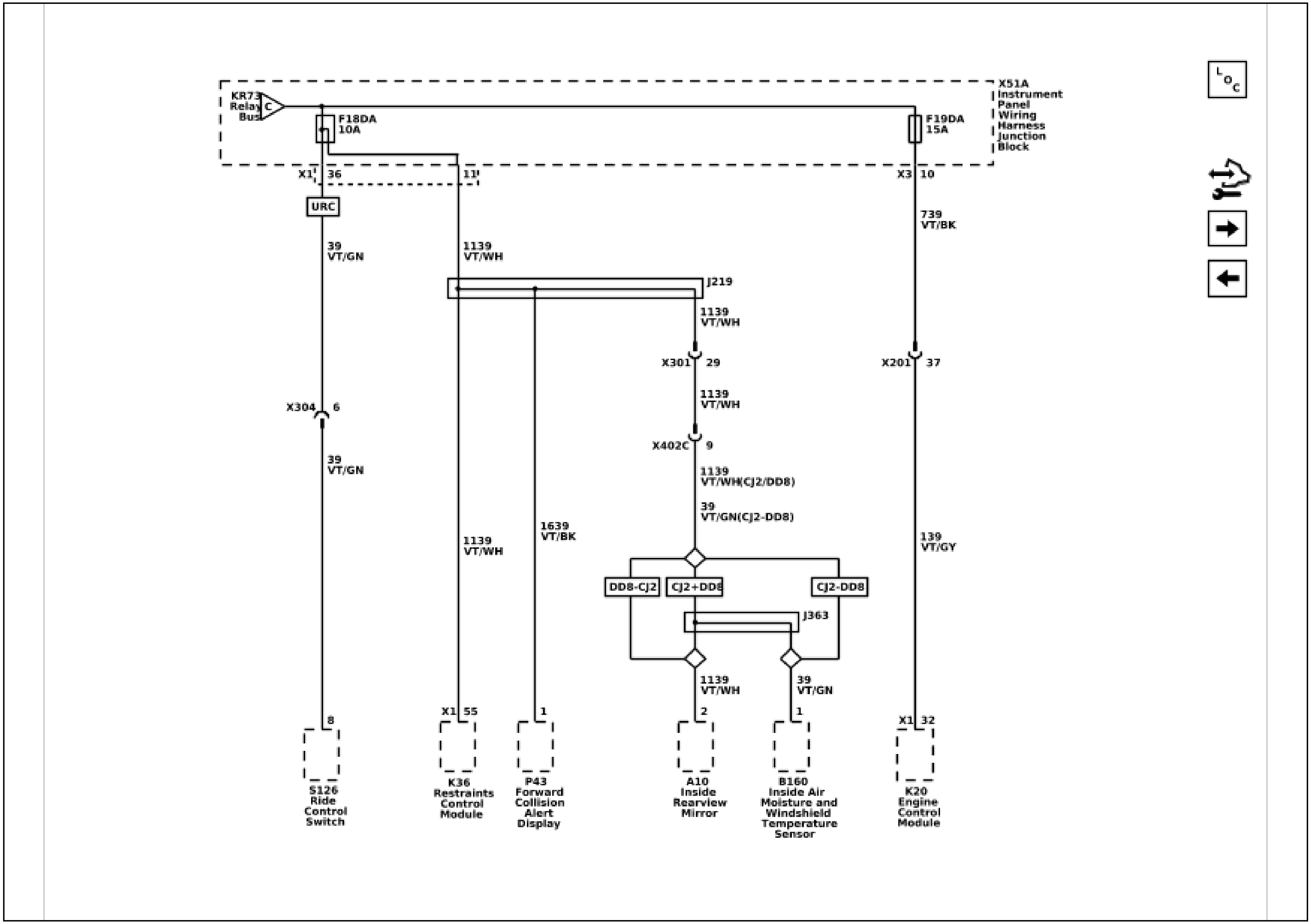
6853095

Power Distribution Schematics (F12DA, F14DA, and F15DA Fuses)


B+
B+ Bus
KR73 Ignition Main Relay
X51A Instrument Panel Wiring Harness Junction Block
KR73 Relay Bus
C
F12DA 10A
F15DA 10A
F14DA 10A
X3 - 12 (Not Used)
X3 11
X1 12
X1 - 13 (Not Used)
739 VT/BK(KI6/KI7/KCA/KC9/KU9)
1139 VT/WH(-(KI6/KI7/KCA/KC9/KU9))
-(KI6/KI7/KCA/KC9/KU9)
KI6/KI7/KCA/KC9/KU9
739 VT/BK
J205
KI6/KI7
KU9
KU9
1139 VT/WH
1139 VT/WH
539 VT/GY
839 VT/GN
839 VT/GN
X302B 10
X402B 15
839 VT/GN
839 VT/GN
J343
J348
1139 VT/WH
839 VT/GN
839 VT/GN
839 VT/GN
839 VT/GN
1
1
1
1
X5 18
X2 3
K219 Lighting Control Module
T1 DC/AC Converter Control Module
M73A Front Seat Back Ventilation Blower - Driver
M73D Front Seat Cushion Ventilation Blower - Driver
M73B Front Seat Back Ventilation Blower - Passenger
M73P Front Seat Cushion Ventilation Blower - Passenger
739 VT/BK
X301 28
739 VT/BK
J302
2139 VT/BK
739 VT/BK
X201 22
X101 23
639 VT/WH
2139 VT/BK
739 VT/BK
-(NP0/NQH)
NP0/NQH
G93/G94
-G93/G94
2139 VT/BK
2139 VT/BK
739 VT/BK
739 VT/BK
J150
J400
2139 VT/BK
739 VT/BK
739 VT/BK
9
2139 VT/BK
2139 VT/BK
739 VT/BK
739 VT/BK
35
6
10
K160 Brake System Control Module
A104 Brake Master Cylinder
K71 Transmissio Control Module
K69 Transfer Case Control Module
K38 Chassis Control Module
K68 Trailer Lamp Control Module
L O C

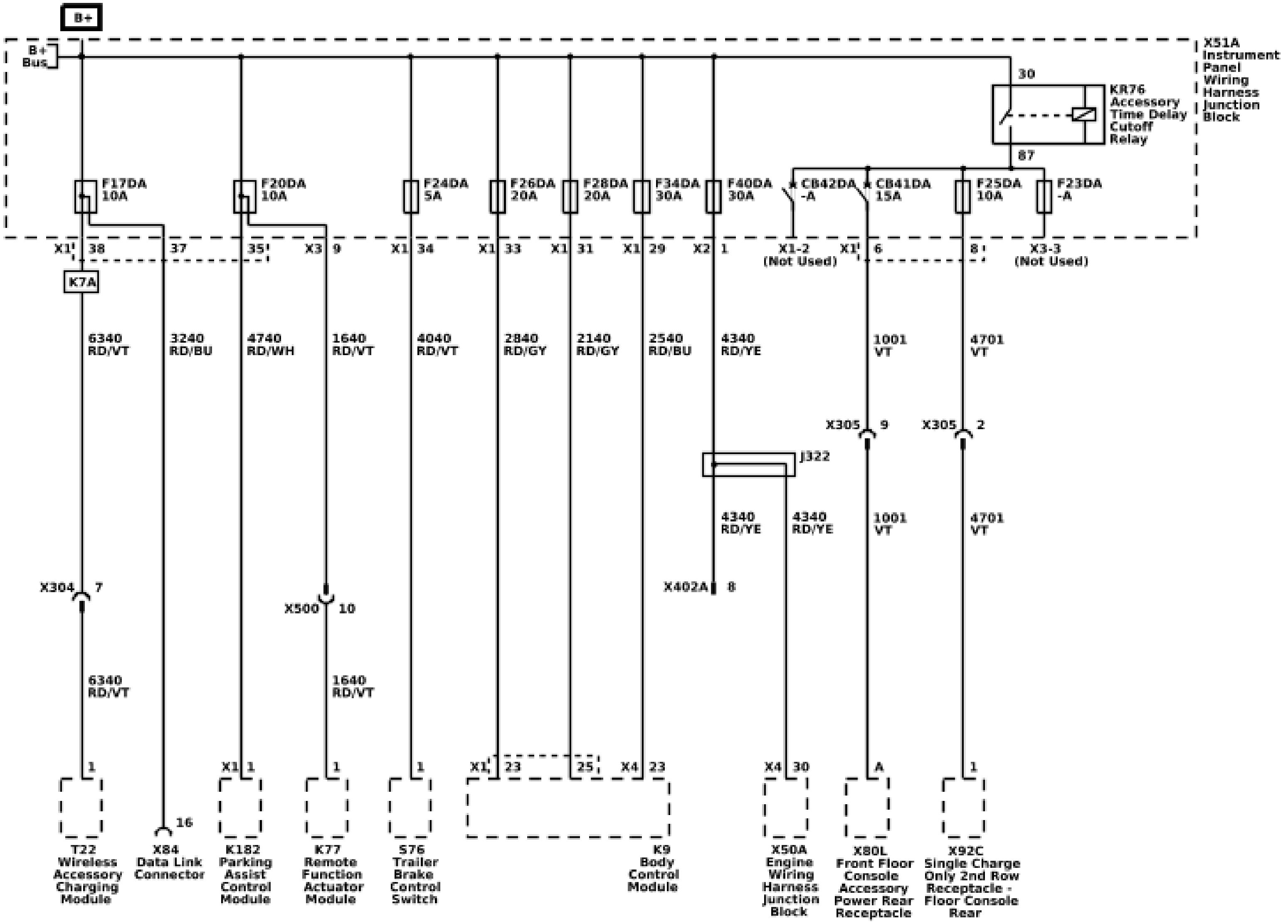
6853096

Power Distribution Schematics (F18DA and F19DA Fuses)


X51A Instrument Panel Wiring Harness Junction Block
KR73 Relay Bus
C
F18DA 10A
F19DA 15A
X1 36
11
X3 10
URC
39 VT/GN
1139 VT/WH
739 VT/BK
J219
1139 VT/WH
X301 29
X201 37
X304 6
1139 VT/WH
X402C 9
1139 VT/WH(CJ2/DD8)
39 VT/GN(CJ2-DD8)
39 VT/GN
1139 VT/WH
1639 VT/BK
139 VT/GY
DD8-CJ2
CJ2+DD8
CJ2-DD8
J363
1139 VT/WH
39 VT/GN
8
X1 55
1
2
1
X1 32
S126 Ride Control Switch
K36 Restraints Control Module
P43 Forward Collision Alert Display
A10 Inside Rearview Mirror
B160 Inside Air Moisture and Windshield Temperature Sensor
K20 Engine Control Module

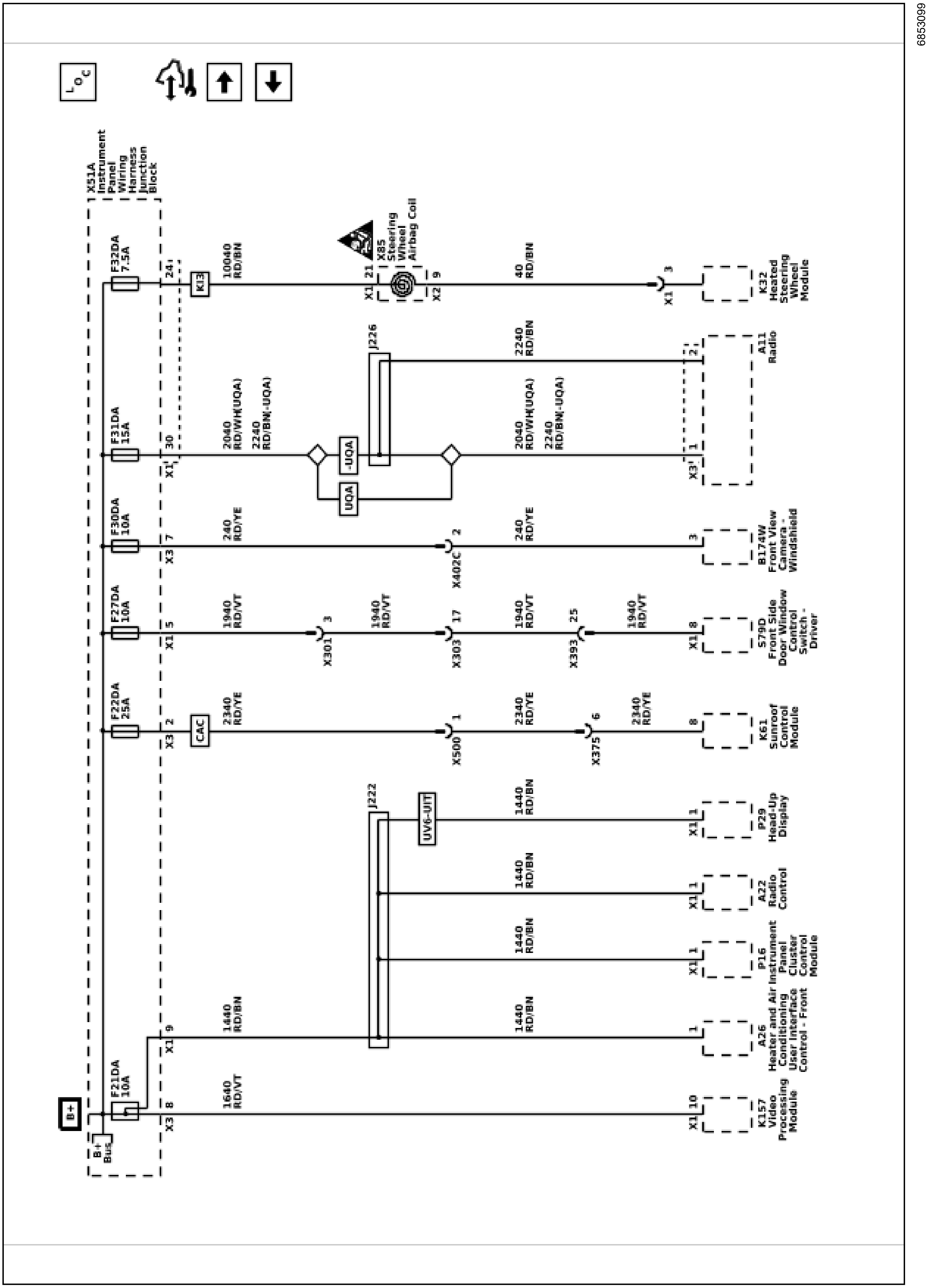
6853097

Power Distribution Schematics (F17DA, F20DA, F23DA, F24DA, F25DA, F26DA, F28DA, F34DA, F40D, CB41DA, and CB42DA Fuses)

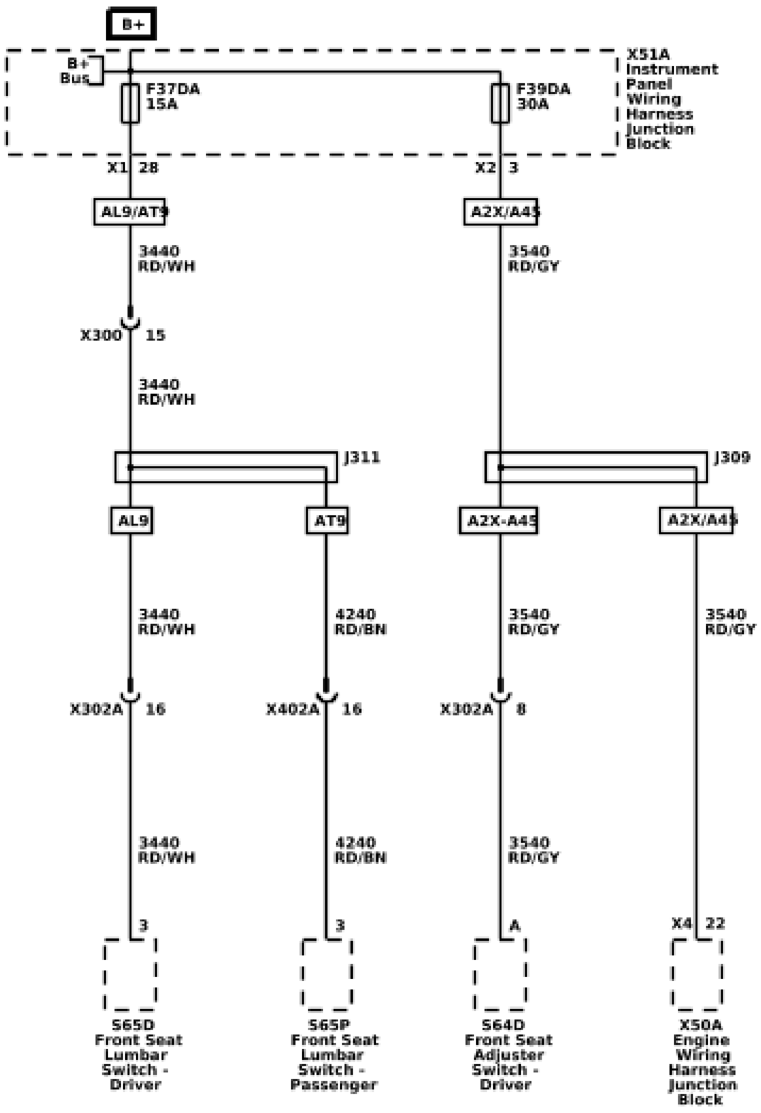

B+
B+ Bus
X51A Instrument Panel Wiring Harness Junction Block
KR76 Accessory Time Delay Cutoff Relay
30
87
F17DA 10A
F20DA 10A
F24DA 5A
F26DA 20A
F28DA 20A
F34DA 30A
F40DA 30A
CB42DA -A
CB41DA 15A
F25DA 10A
F23DA -A
X1 38
37
35
X3 9
X1 34
X1 33
X1 31
X1 29
X2 1
X1-2 (Not Used)
X1 6
8
X3-3 (Not Used)
K7A
6340 RD/VT
3240 RD/BU
4740 RD/WH
1640 RD/VT
4040 RD/VT
2840 RD/GY
2140 RD/GY
2540 RD/BU
4340 RD/YE
1001 VT
4701 VT
X305 9
X305 2
J322
4340 RD/YE
4340 RD/YE
1001 VT
4701 VT
X304 7
X500 10
X402A 8
6340 RD/VT
1640 RD/VT
1
X1 1
1
1
X1 23
25
X4 23
X4 30
A
1
16
T22 Wireless Accessory Charging Module
X84 Data Link Connector
K182 Parking Assist Control Module
K77 Remote Function Actuator Module
S76 Trailer Brake Control Switch
K9 Body Control Module
X50A Engine Wiring Harness Junction Block
X80L Front Floor Console Accessory Power Rear Receptacle
X92C Single Charge Only 2nd Row Receptacle - Floor Console Rear
L O C

6853098

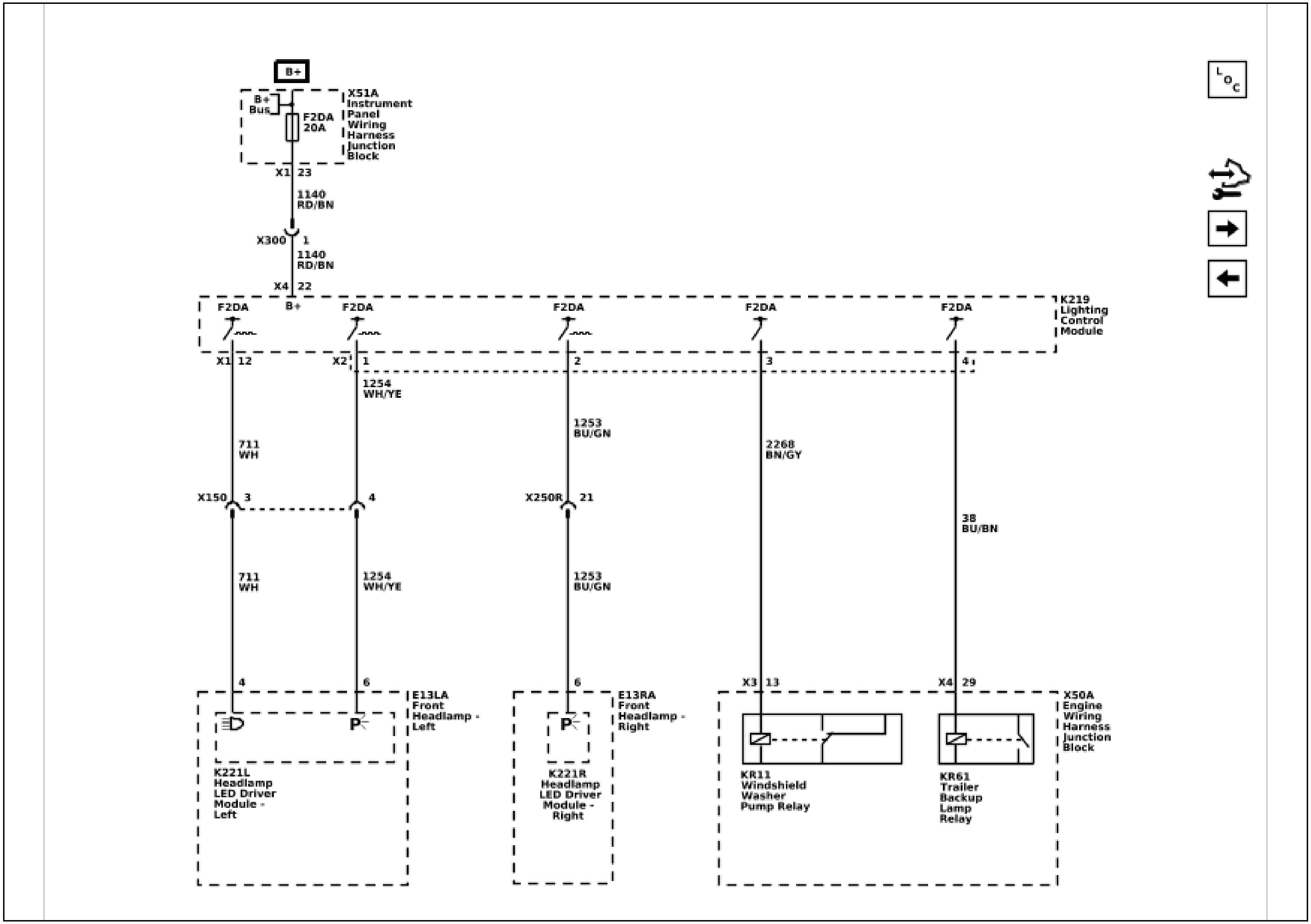
Power Distribution Schematics (F21DA, F22DA, F27DA, F30DA, F31DA, and F32DA Fuses)


6853099
X51A Instrument Panel Wiring Harness Junction Block
B+
B+ Bus
F21DA 10A
F22DA 25A
F27DA 10A
F30DA 10A
F31DA 15A
F32DA 7.5A
X3 8
X1 9
X3 2
X1 5
X3 7
X1 30
24
KI3
CAC
UQA
-UQA
UV6-UIT
J222
J226
1640 RD/VT
1440 RD/BN
2340 RD/YE
1940 RD/VT
240 RD/YE
2040 RD/WH(UQA)
2240 RD/BN(-UQA)
2240 RD/BN
10040 RD/BN
40 RD/BN
X500 1
X375 6
X301 3
X303 17
X393 25
X402C 2
X1 21
X2 9
X85 Steering Wheel Airbag Coil
X1 3
X1 10
K157 Video Processing Module
1
A26 Heater and Air Conditioning User Interface Control - Front
X1 1
P16 Instrument Panel Cluster Control Module
A22 Radio Control
P29 Head-Up Display
8
K61 Sunroof Control Module
X1 8
S79D Front Side Door Window Control Switch - Driver
3
B174W Front View Camera - Windshield
X3 1
2
A11 Radio
K32 Heated Steering Wheel Module

Power Distribution Schematics (F37DA and F39DA Fuses)

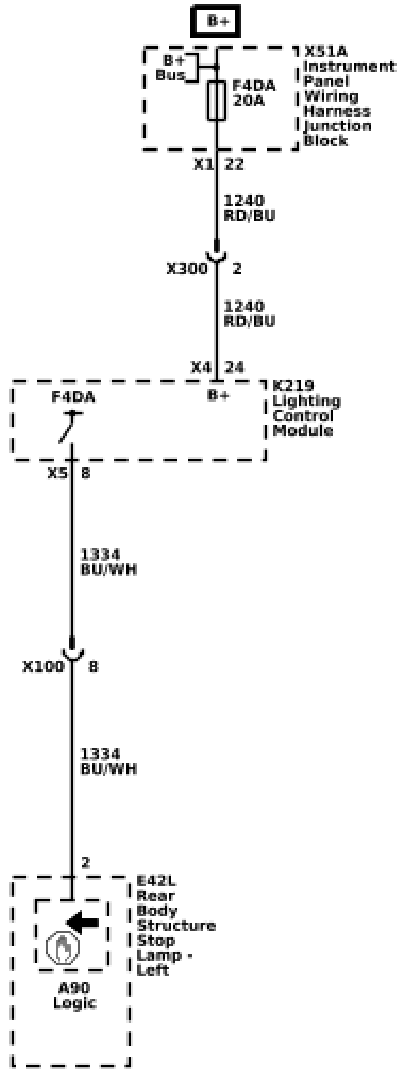

B+
B+ Bus
F37DA 15A
F39DA 30A
X51A Instrument Panel Wiring Harness Junction Block
X1 28
X2 3
AL9/AT9
A2X/A45
3440 RD/WH
3540 RD/GY
X300 15
3440 RD/WH
J311
J309
AL9
AT9
A2X-A45
A2X/A45
3440 RD/WH
4240 RD/BN
3540 RD/GY
3540 RD/GY
X302A 16
X402A 16
X302A 8
3440 RD/WH
4240 RD/BN
3540 RD/GY
3
3
A
X4 22
S65D Front Seat Lumbar Switch - Driver
S65P Front Seat Lumbar Switch - Passenger
S64D Front Seat Adjuster Switch - Driver
X50A Engine Wiring Harness Junction Block
6853100

Power Distribution Schematics (F2DA Fuse and Lighting Control Module Fused Outputs)


B+
B+ Bus
F2DA 20A
X51A Instrument Panel Wiring Harness Junction Block
X1 23
1140 RD/BN
X300 1
1140 RD/BN
X4 22
B+
F2DA
F2DA
F2DA
F2DA
F2DA
K219 Lighting Control Module
X1 12
X2 1
2
3
4
1254 WH/YE
1253 BU/GN
2268 BN/GY
711 WH
X150 3
4
X250R 21
38 BU/BN
711 WH
1254 WH/YE
1253 BU/GN
4
6
6
X3 13
X4 29
E13LA Front Headlamp - Left
E13RA Front Headlamp - Right
X50A Engine Wiring Harness Junction Block
K221L Headlamp LED Driver Module - Left
K221R Headlamp LED Driver Module - Right
KR11 Windshield Washer Pump Relay
KR61 Trailer Backup Lamp Relay

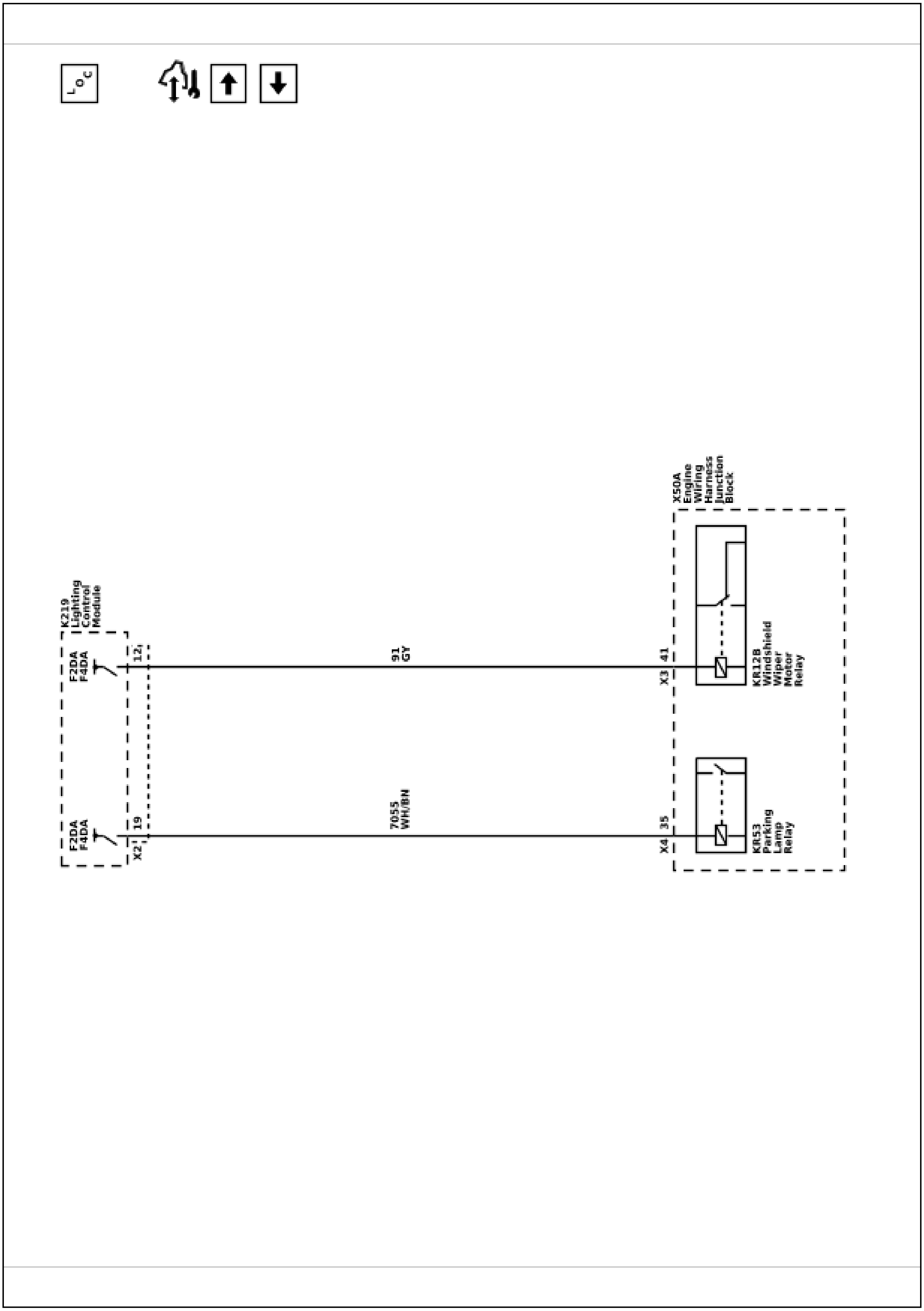
6853101

Power Distribution Schematics (F4DA Fuse and Lighting Control Module Fused Outputs)

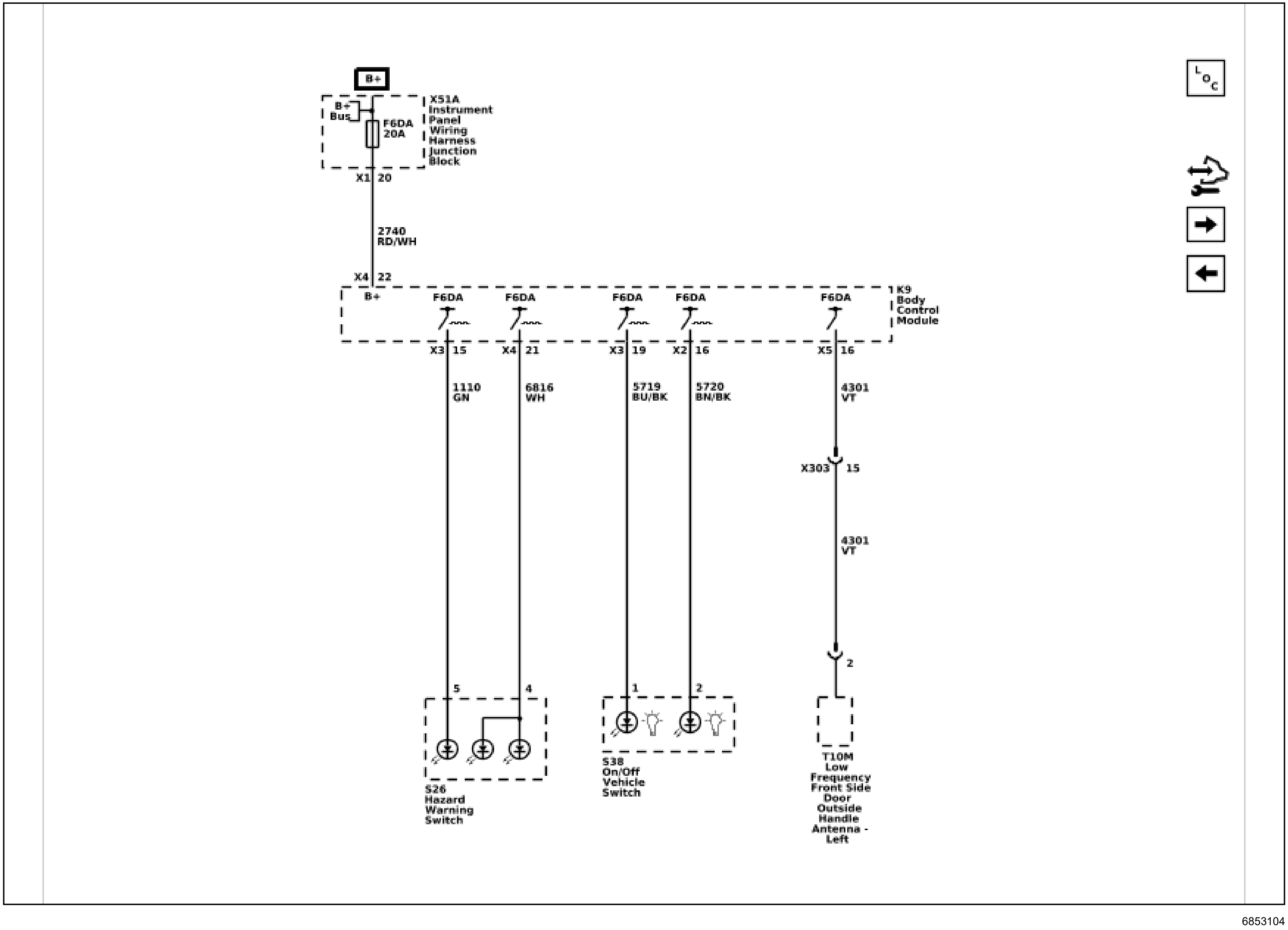

B+
B+
Bus
F4DA
20A
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
X1 22
1240
RD/BU
X300 2
1240
RD/BU
X4 24
B+
F4DA
K219
Lighting
Control
Module
X5 8
1334
BU/WH
X100 8
1334
BU/WH
2
E42L
Rear
Body
Structure
Stop
Lamp -
Left
A90
Logic

6853102

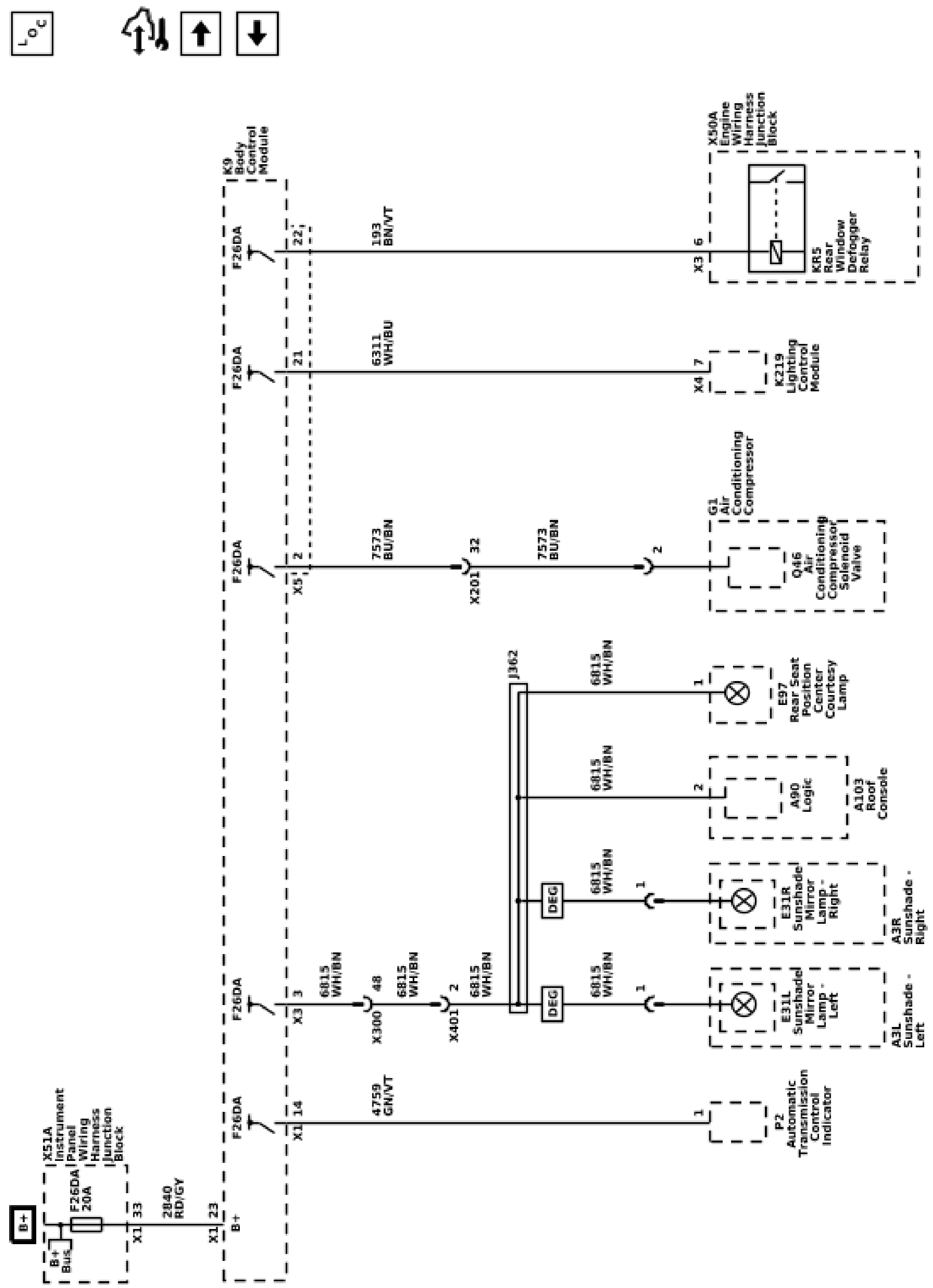
Power Distribution Schematics (F2DA and F4DA Fuses and Lighting Control Module Redundant Fused Outputs)


6853103
K219 Lighting Control Module
F2DA F4DA
12
X2 19
91 GY
7055 WH/BN
X3 41
X4 35
X50A Engine Wiring Harness Junction Block
KR12B Windshield Wiper Motor Relay
KR53 Parking Lamp Relay

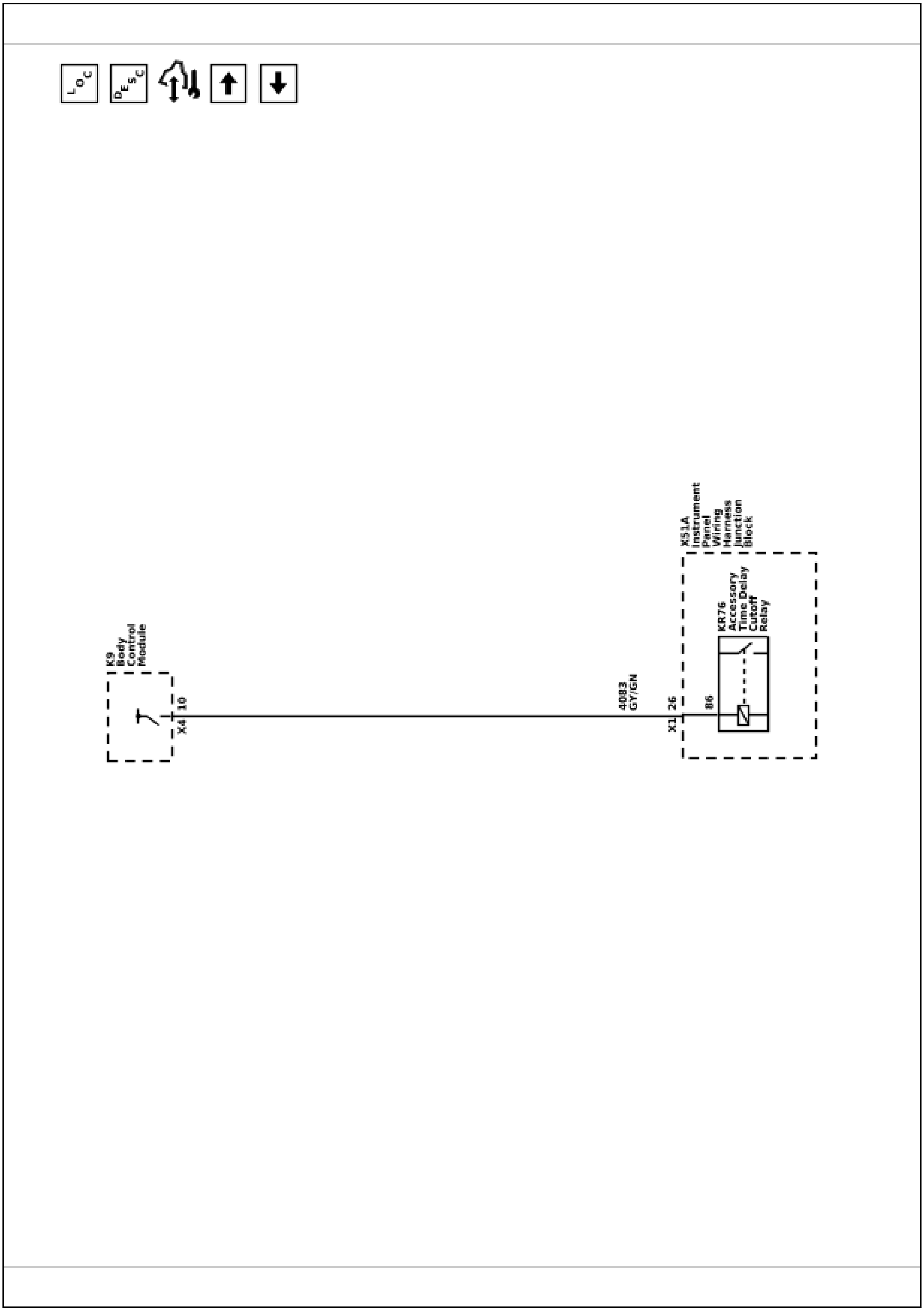
Power Distribution Schematics (F6DA Fuse and Body Control Module Fused Outputs)


B+
B+ Bus
F6DA 20A
X51A Instrument Panel Wiring Harness Junction Block
X1 20
2740 RD/WH
X4 22
B+
F6DA
F6DA
F6DA
F6DA
F6DA
K9 Body Control Module
X3 15
X4 21
X3 19
X2 16
X5 16
1110 GN
6816 WH
5719 BU/BK
5720 BN/BK
4301 VT
X303 15
4301 VT
2
5
4
1
2
S26 Hazard Warning Switch
S38 On/Off Vehicle Switch
T10M Low Frequency Front Side Door Outside Handle Antenna - Left
6853104

Power Distribution Schematics (F26DA Fuse and Body Control Module Fused Outputs)

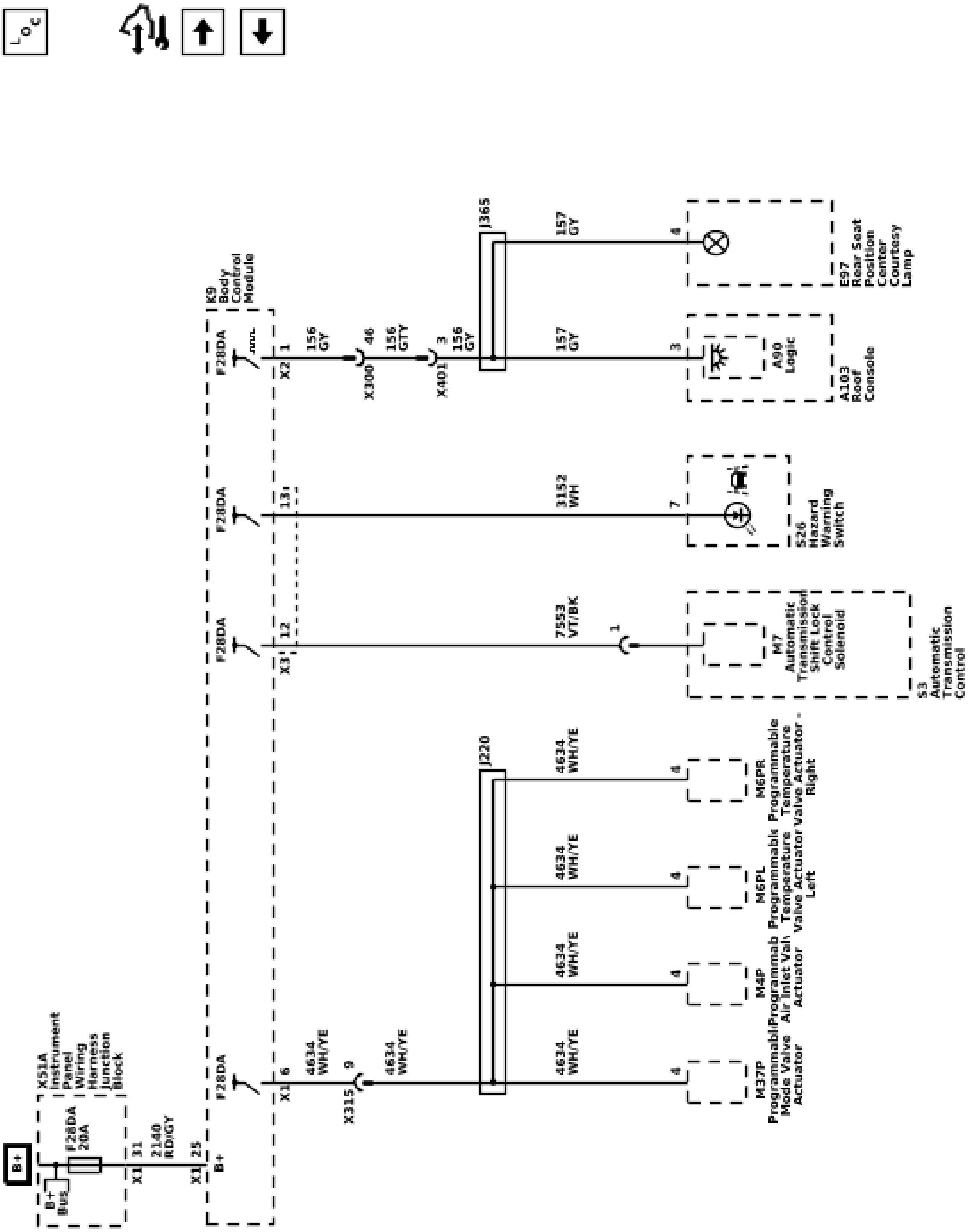

6853105
B+
B+ Bus
F26DA 20A
X51A Instrument Panel Wiring Harness Junction Block
X1 33
2840 RD/GY
X1 23
B+
K9 Body Control Module
F26DA
X1 14
4759 GN/VT
1
P2 Automatic Transmission Control Indicator
X3 3
6815 WH/BN
X300 48
X401 2
J362
DEG
1
E31L Sunshade Mirror Lamp - Left
A3L Sunshade - Left
E31R Sunshade Mirror Lamp - Right
A3R Sunshade - Right
2
A90 Logic
A103 Roof Console
E97 Rear Seat Position Center Courtesy Lamp
X5 2
7573 BU/BN
X201 32
Q46 Air Conditioning Compressor Solenoid Valve
G1 Air Conditioning Compressor
21
6311 WH/BU
X4 7
K219 Lighting Control Module
22
193 BN/VT
X3 6
KR5 Rear Window Defogger Relay
X50A Engine Wiring Harness Junction Block

Power Distribution Schematics (F6DA and F26DA Fuses and Body Control Module Redundant Fused Outputs)


K9 Body Control Module
X4 10
4083 GY/GN
X1 26
86
X51A Instrument Panel Wiring Harness Junction Block
KR76 Accessory Time Delay Cutoff Relay

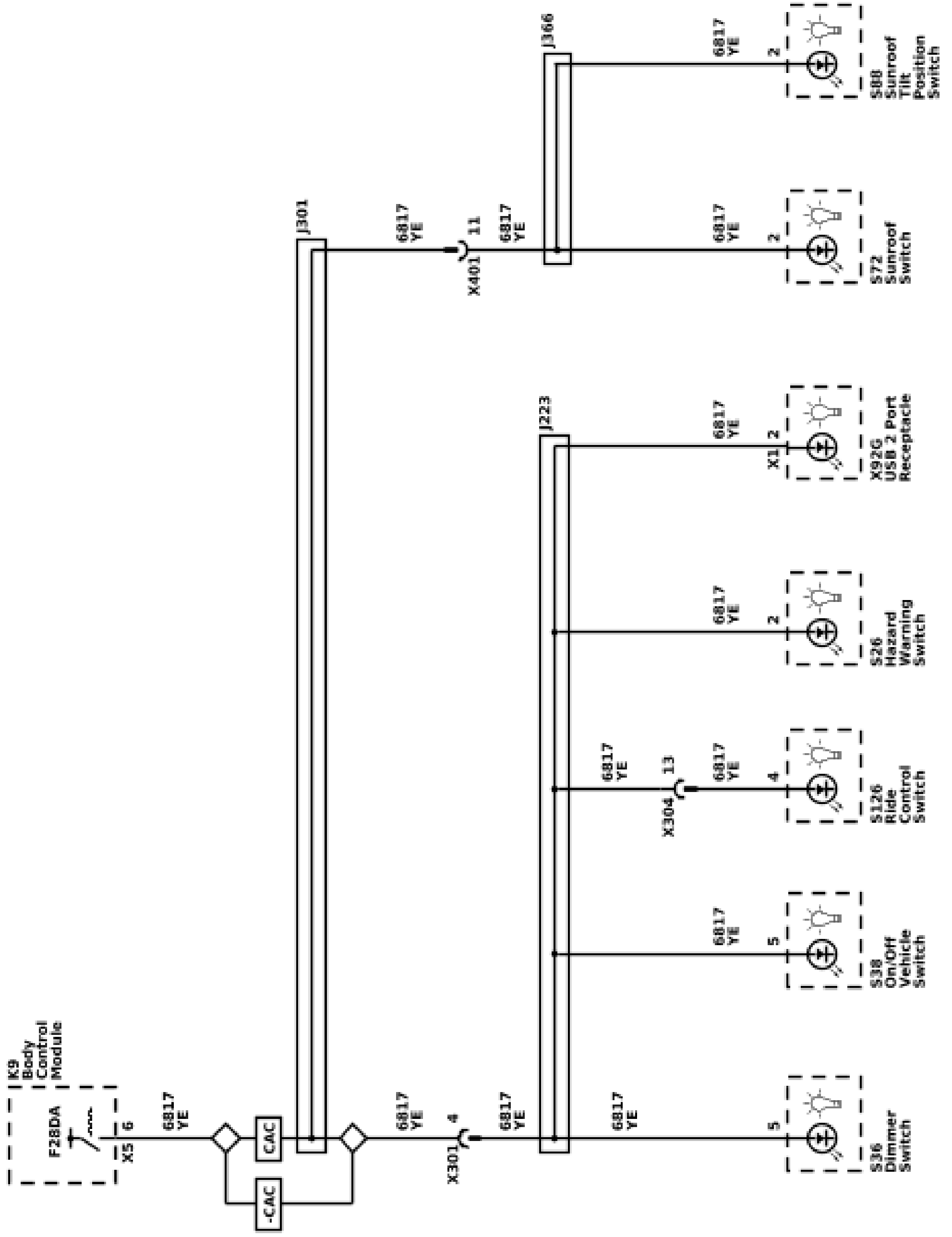
6853106

Power Distribution Schematics (F28DA Fuse and Body Control Module Fused Outputs - 1 of 2)

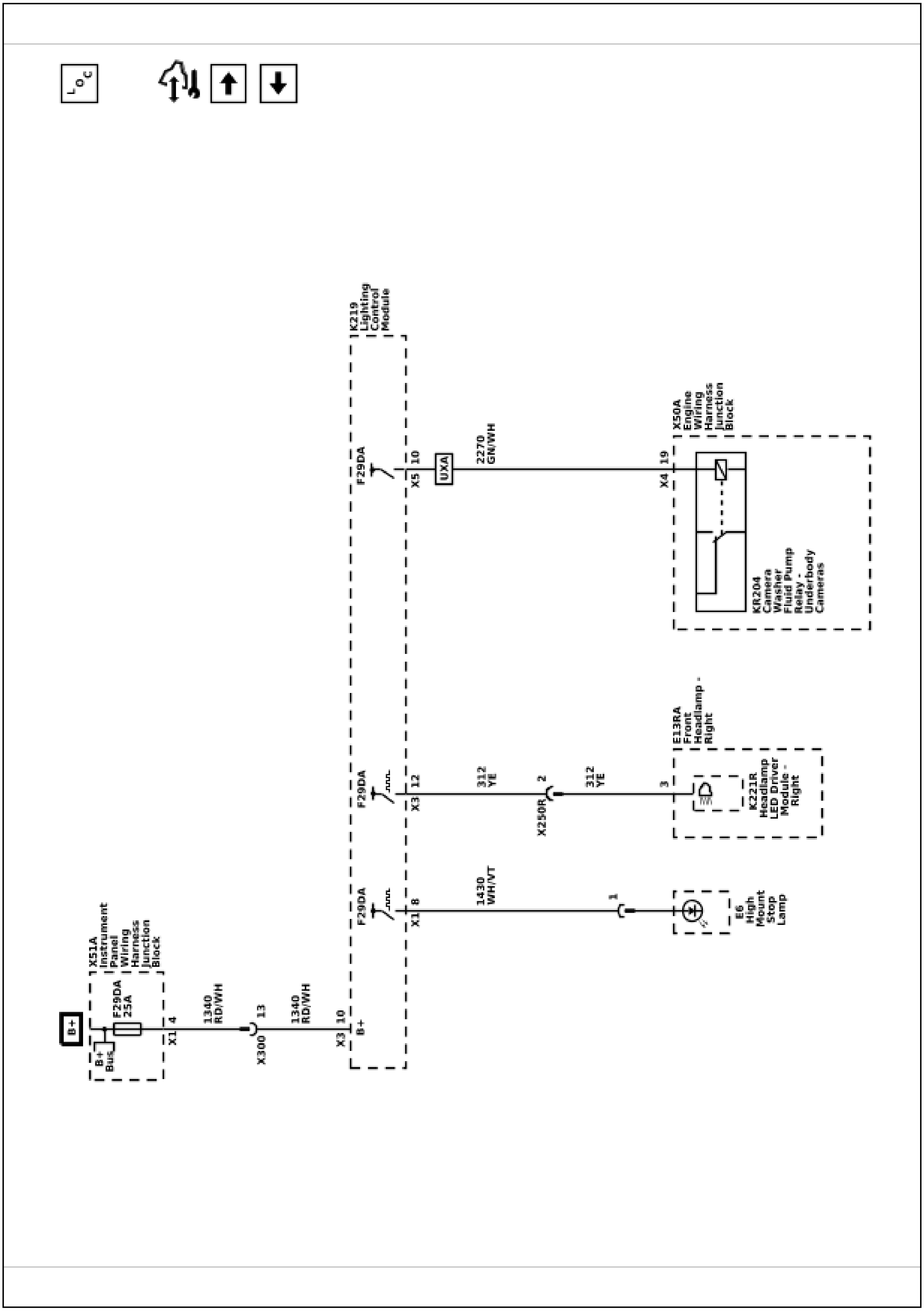

6853107
B+
B+ Bus
F28DA 20A
X1 31
2140 RD/GY
X1 25 B+
X51A Instrument Panel Wiring Harness Junction Block
K9 Body Control Module
F28DA
X1 6
4634 WH/YE
X315 9
4634 WH/YE
J220
4634 WH/YE
4
M37P Programmable Mode Valve Actuator
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator Left
M6PR Programmable Temperature Valve Actuator - Right
X3 12
7553 VT/BK
1
M7 Automatic Transmission Shift Lock Control Solenoid
S3 Automatic Transmission Control
13
3152 WH
7
S26 Hazard Warning Switch
X2 1
156 GY
X300 46
156 GTY
X401 3
156 GY
J365
157 GY
3
A90 Logic
A103 Roof Console
E97 Rear Seat Position Center Courtesy Lamp

Power Distribution Schematics (F28DA Fuse and Body Control Module Fused Outputs - 2 of 2)

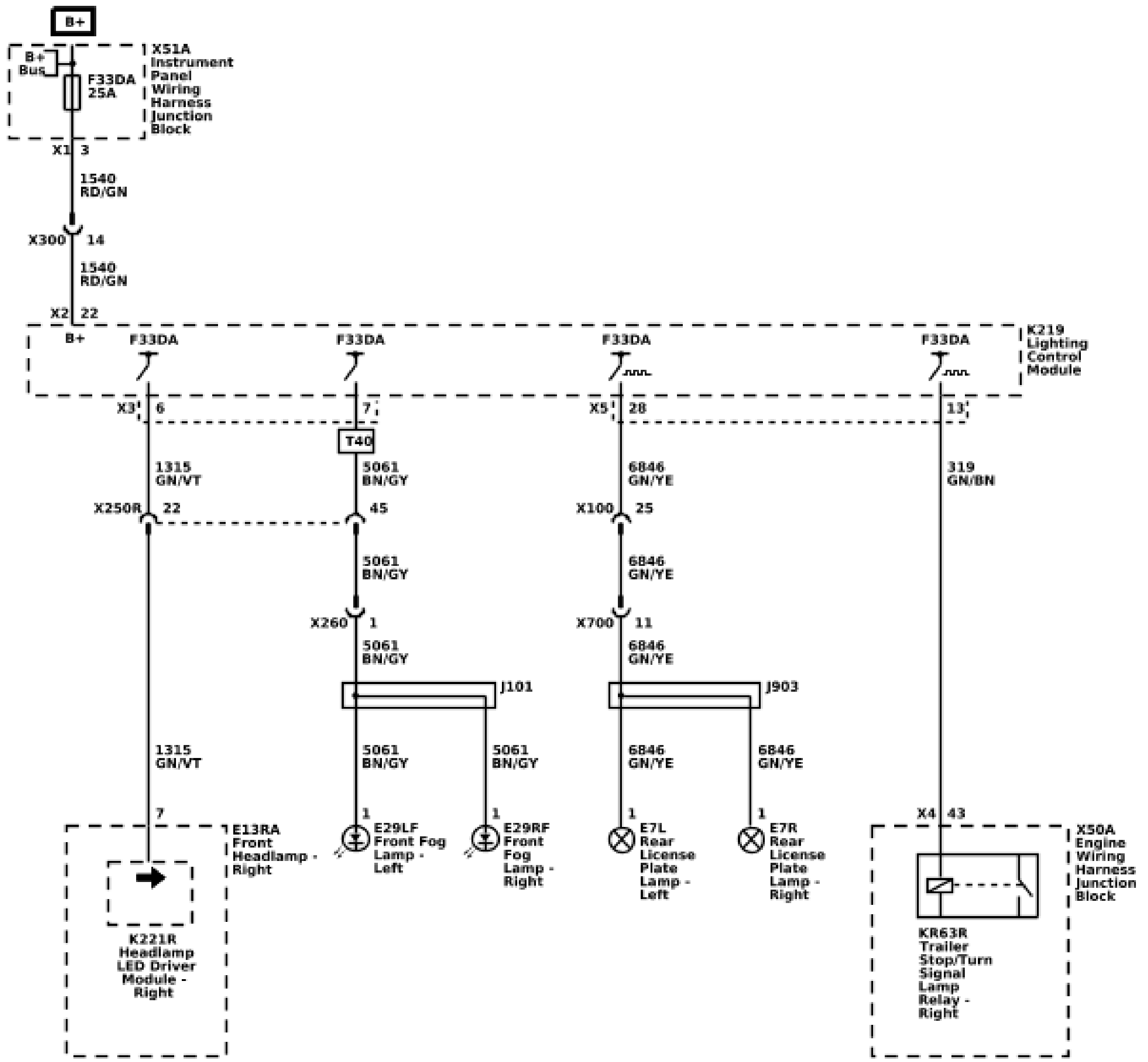
6853108


K9 Body Control Module
F28DA
X5 6
6817 YE
CAC
-CAC
J301
6817 YE
11
X401
6817 YE
J366
6817 YE
2
S88 Sunroof Tilt Position Switch
6817 YE
2
S72 Sunroof Switch
4
X301
6817 YE
J223
6817 YE
X1 2
X92G USB 2 Port Receptacle
6817 YE
2
S26 Hazard Warning Switch
6817 YE
13
X304
6817 YE
4
S126 Ride Control Switch
6817 YE
5
S38 On/Off Vehicle Switch
6817 YE
5
S36 Dimmer Switch

Power Distribution Schematics (F29DA Fuse and Lighting Control Module Fused Outputs)

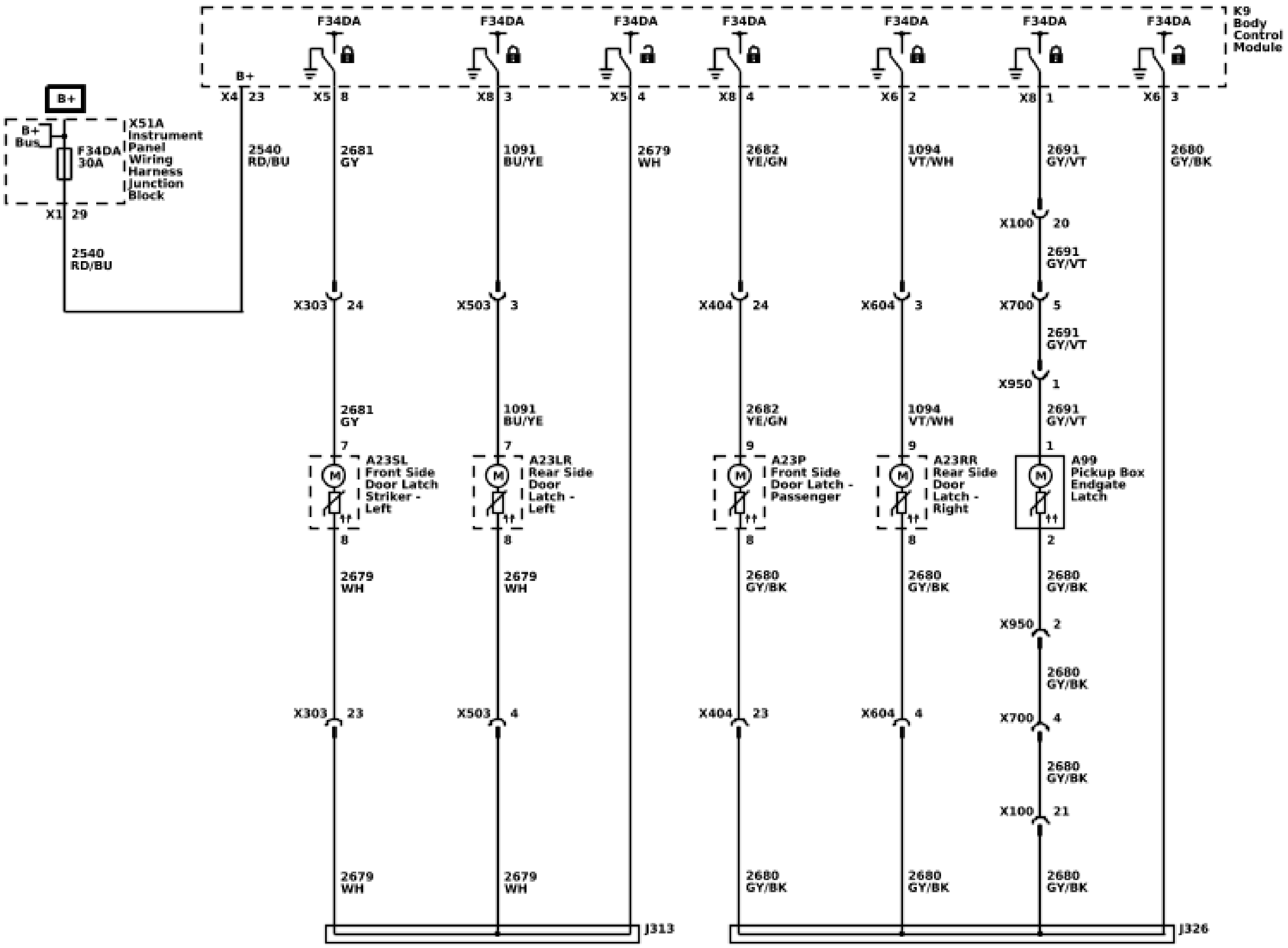

6853109
B+
B+ Bus
X51A Instrument Panel Wiring Harness Junction Block
F29DA 25A
X1 4
1340 RD/WH
X300 13
1340 RD/WH
X3 10
B+
K219 Lighting Control Module
F29DA
X1 8
1430 WH/VT
1
E6 High Mount Stop Lamp
F29DA
X3 12
312 YE
X250R 2
312 YE
3
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
F29DA
X5 10
UXA
2270 GN/WH
X4 19
X50A Engine Wiring Harness Junction Block
KR204 Camera Washer Fluid Pump Relay - Underbody Cameras

Power Distribution Schematics (F33DA Fuse and Lighting Control Module Fused Outputs)


B+
B+ Bus
F33DA 25A
X51A Instrument Panel Wiring Harness Junction Block
X1 3
1540 RD/GN
X300 14
1540 RD/GN
X2 22
B+
F33DA
F33DA
F33DA
F33DA
K219 Lighting Control Module
X3 6
7
X5 28
13
T40
1315 GN/VT
5061 BN/GY
6846 GN/YE
319 GN/BN
X250R 22
45
X100 25
5061 BN/GY
6846 GN/YE
X260 1
X700 11
5061 BN/GY
6846 GN/YE
J101
J903
1315 GN/VT
5061 BN/GY
5061 BN/GY
6846 GN/YE
6846 GN/YE
7
1
1
1
1
X4 43
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
E29LF Front Fog Lamp - Left
E29RF Front Fog Lamp - Right
E7L Rear License Plate Lamp - Left
E7R Rear License Plate Lamp - Right
X50A Engine Wiring Harness Junction Block
KR63R Trailer Stop/Turn Signal Lamp Relay - Right

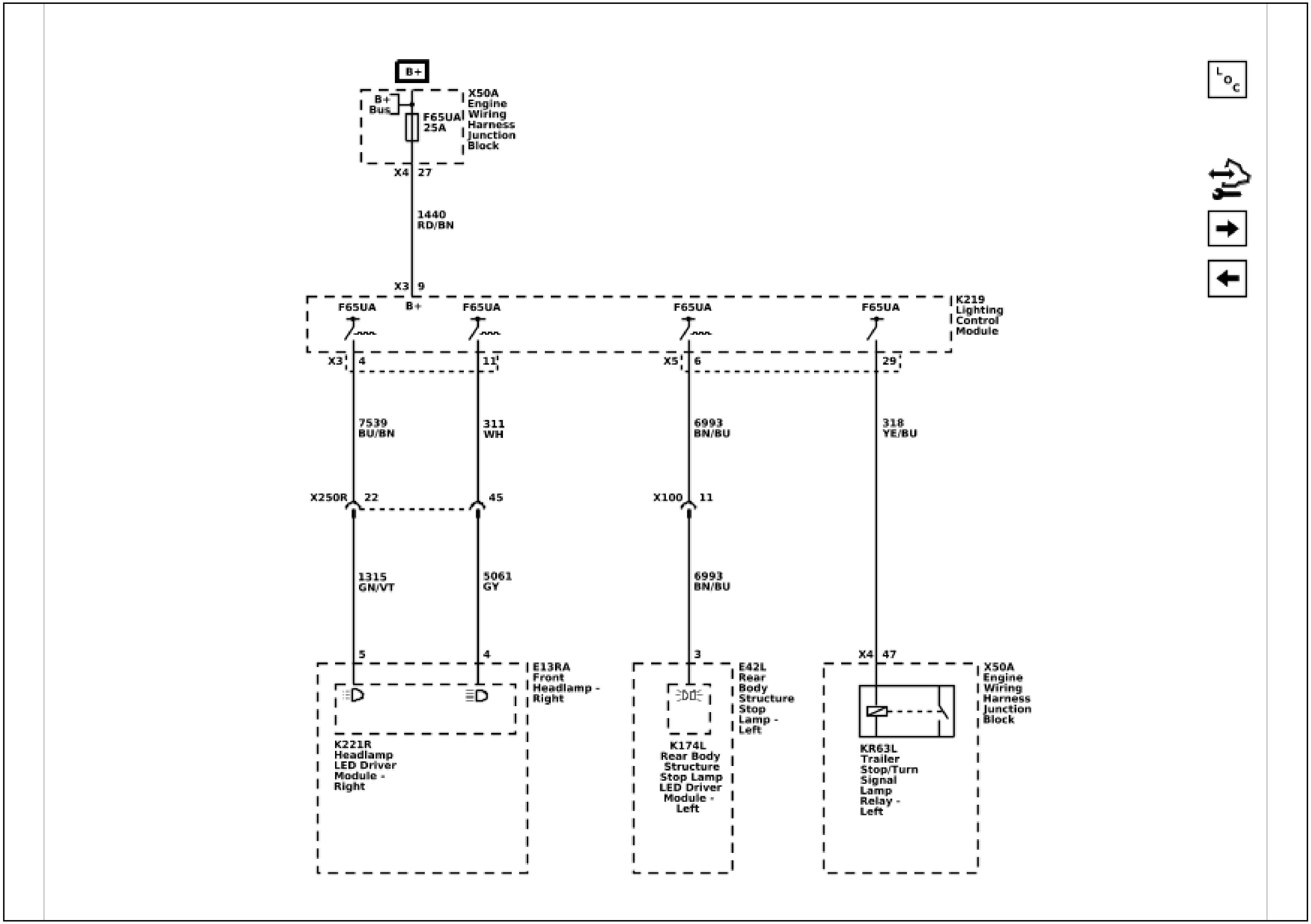
6853110

Power Distribution Schematics (F34DA Fuse and Body Control Module Fused Outputs)


K9 Body Control Module
F34DA
B+
X4 23
X5 8
X8 3
X5 4
X8 4
X6 2
X8 1
X6 3
X51A Instrument Panel Wiring Harness Junction Block
B+ Bus
F34DA 30A
X1 29
2540 RD/BU
2681 GY
1091 BU/YE
2679 WH
2682 YE/GN
1094 VT/WH
2691 GY/VT
2680 GY/BK
X100 20
X303 24
X503 3
X404 24
X604 3
X700 5
X950 1
7
9
1
A23SL Front Side Door Latch Striker - Left
A23LR Rear Side Door Latch - Left
A23P Front Side Door Latch - Passenger
A23RR Rear Side Door Latch - Right
A99 Pickup Box Endgate Latch
M
8
2
X950 2
X303 23
X503 4
X404 23
X604 4
X700 4
X100 21
J313
J326

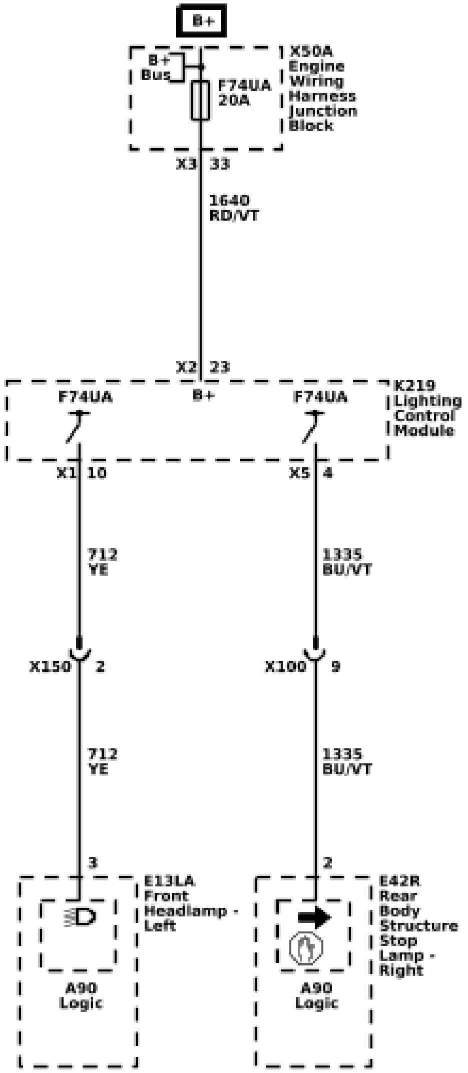
6853111

Power Distribution Schematics (F65UA Fuse and Lighting Control Module Fused Outputs)


B+
B+ Bus
F65UA 25A
X50A Engine Wiring Harness Junction Block
X4 27
1440 RD/BN
X3 9
B+
F65UA
F65UA
F65UA
F65UA
K219 Lighting Control Module
X3 4
11
X5 6
29
7539 BU/BN
311 WH
6993 BN/BU
318 YE/BU
X250R 22
45
X100 11
1315 GN/VT
5061 GY
6993 BN/BU
5
4
3
X4 47
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
E42L Rear Body Structure Stop Lamp - Left
K174L Rear Body Structure Stop Lamp LED Driver Module - Left
X50A Engine Wiring Harness Junction Block
KR63L Trailer Stop/Turn Signal Lamp Relay - Left

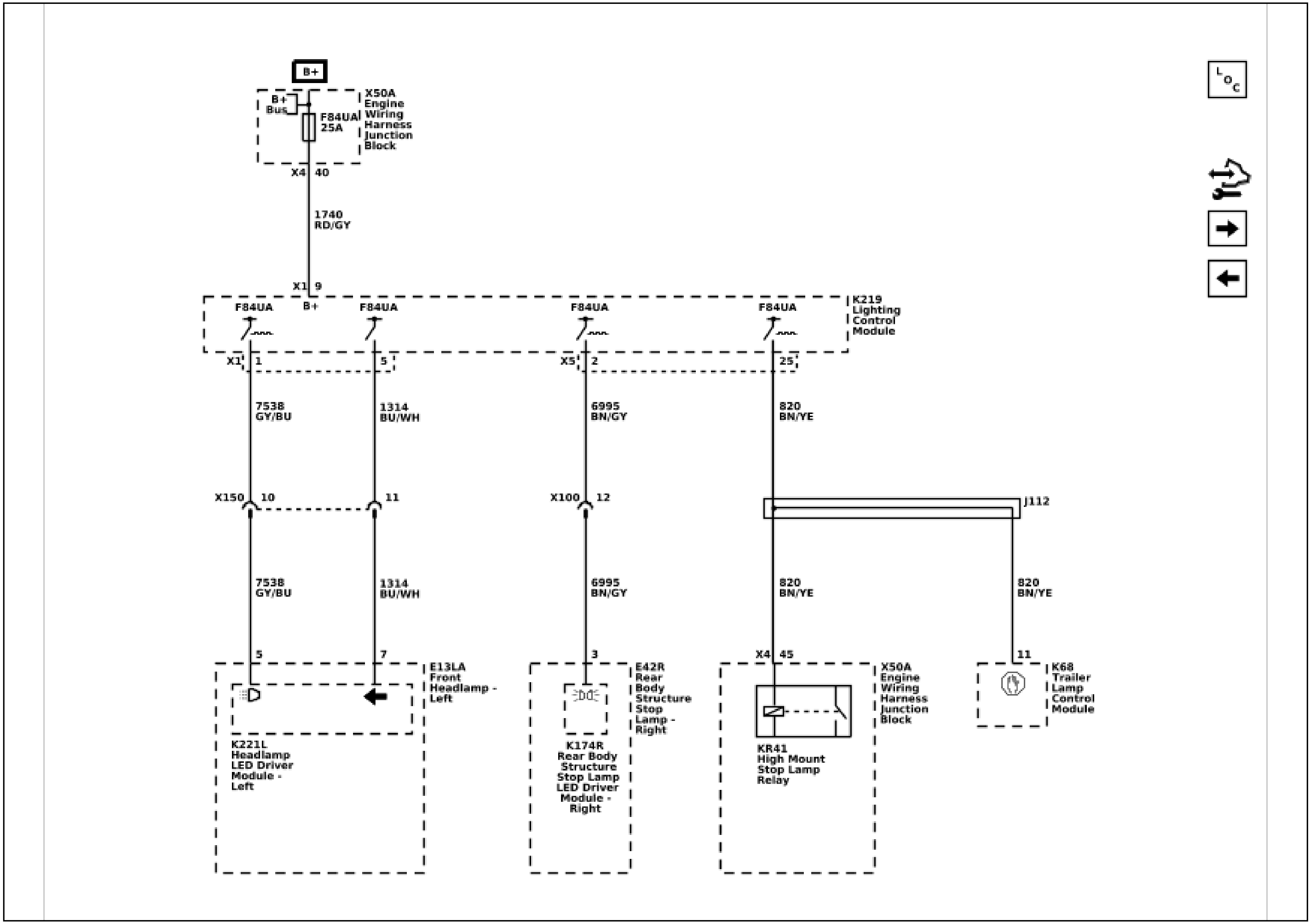
6853112

Power Distribution Schematics (F74UA Fuse and Lighting Control Module Fused Outputs)

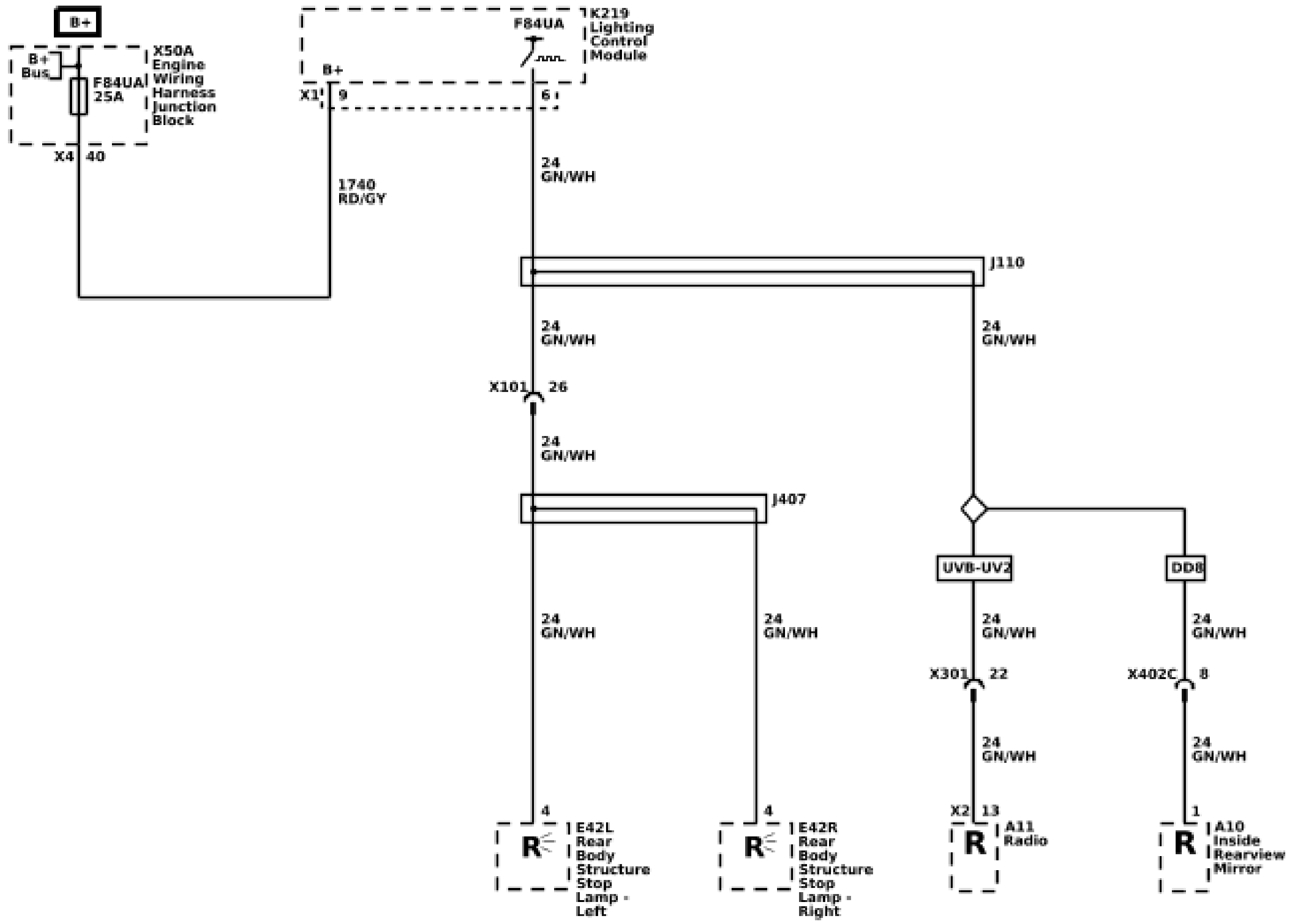

B+
B+
Bus
F74UA
20A
X50A
Engine
Wiring
Harness
Junction
Block
X3 33
1640
RD/VT
X2 23
B+
F74UA
F74UA
K219
Lighting
Control
Module
X1 10
X5 4
712
YE
1335
BU/VT
X150 2
X100 9
712
YE
1335
BU/VT
3
2
E13LA
Front
Headlamp -
Left
E42R
Rear
Body
Structure
Stop
Lamp -
Right
A90
Logic
A90
Logic

6853113

Power Distribution Schematics (F84UA Fuse and Lighting Control Module Fused Outputs - 1 of 2)

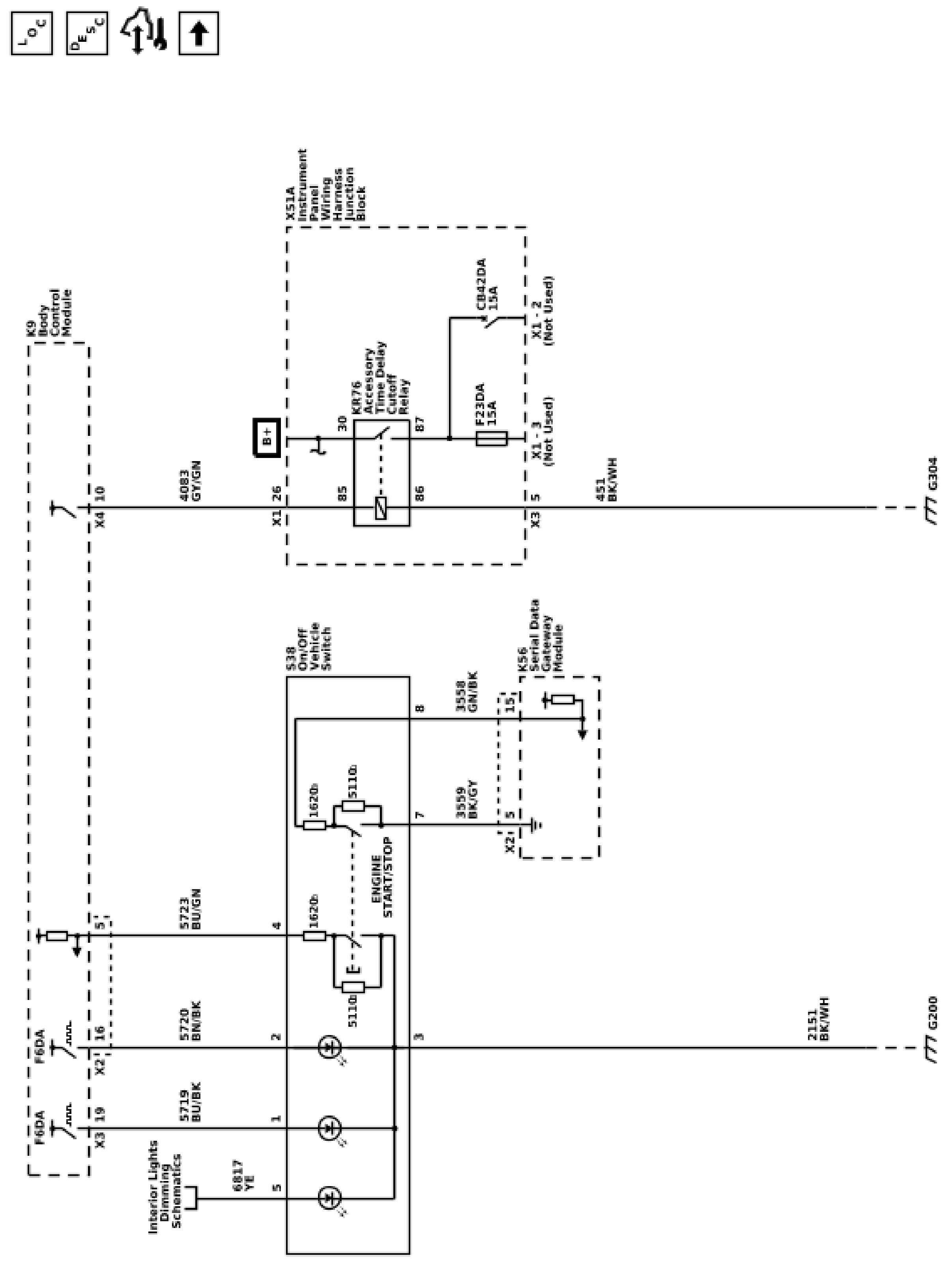

B+
B+ Bus
F84UA 25A
X50A Engine Wiring Harness Junction Block
X4 40
1740 RD/GY
X1 9
B+
F84UA
F84UA
F84UA
F84UA
K219 Lighting Control Module
X1 1
5
X5 2
25
7538 GY/BU
1314 BU/WH
6995 BN/GY
820 BN/YE
X150 10
11
X100 12
J112
7538 GY/BU
1314 BU/WH
6995 BN/GY
820 BN/YE
820 BN/YE
5
7
3
X4 45
11
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
E42R Rear Body Structure Stop Lamp - Right
K174R Rear Body Structure Stop Lamp LED Driver Module - Right
X50A Engine Wiring Harness Junction Block
KR41 High Mount Stop Lamp Relay
K68 Trailer Lamp Control Module
6853114

Power Distribution Schematics (F84UA Fuse and Lighting Control Module Fused Outputs - 2 of 2)


B+
B+ Bus
F84UA 25A
X50A Engine Wiring Harness Junction Block
X4 40
1740 RD/GY
X1 9
B+
F84UA
6
K219 Lighting Control Module
24 GN/WH
J110
24 GN/WH
24 GN/WH
X101 26
24 GN/WH
J407
UVB-UV2
DD8
24 GN/WH
24 GN/WH
24 GN/WH
24 GN/WH
X301 22
X402C 8
24 GN/WH
24 GN/WH
4
E42L Rear Body Structure Stop Lamp - Left
4
E42R Rear Body Structure Stop Lamp - Right
X2 13
A11 Radio
1
A10 Inside Rearview Mirror
R
R
R
R

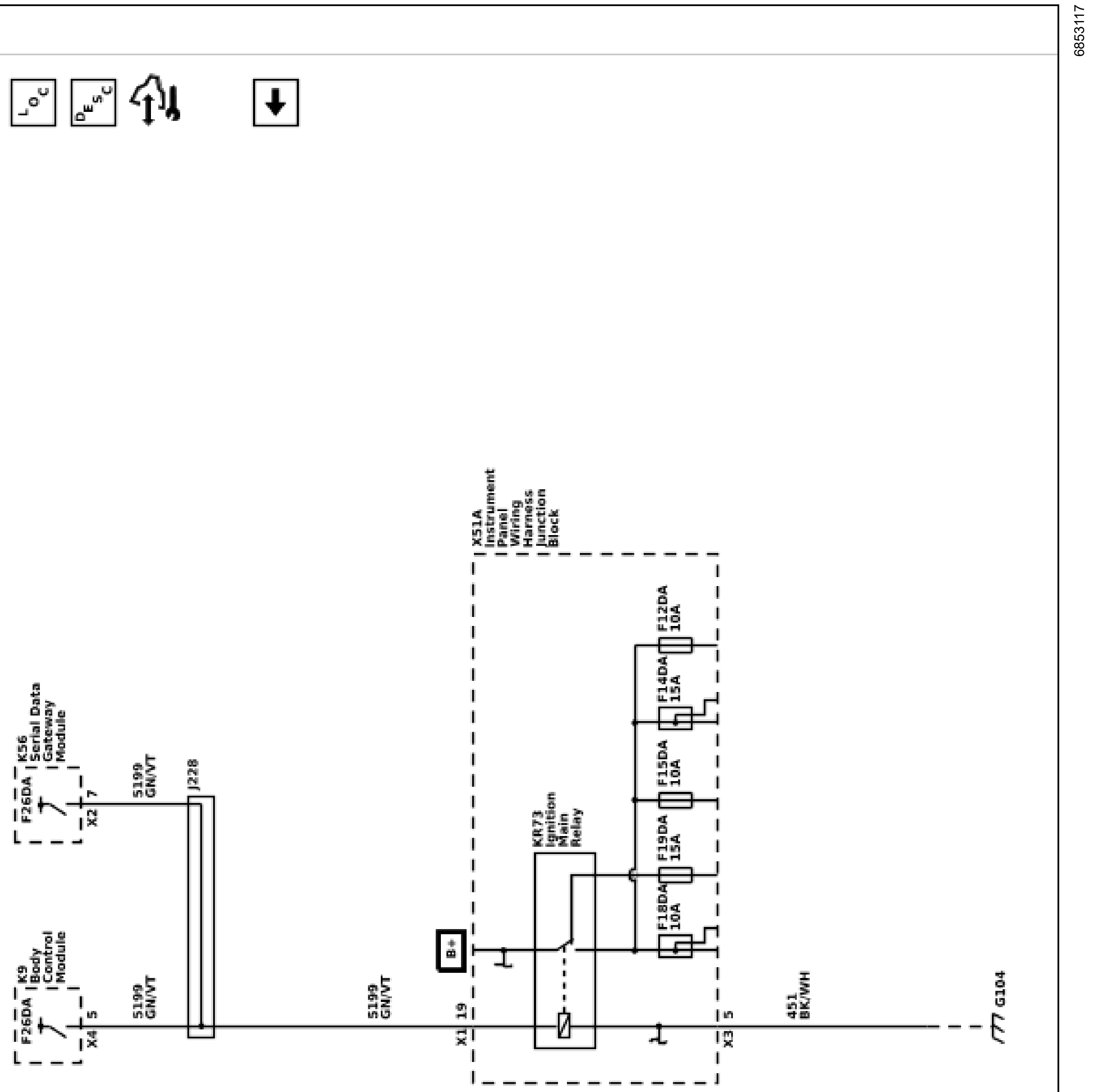
6853115

Power Moding Schematics (On/Off Vehicle Switch and Retained Accessory Power)

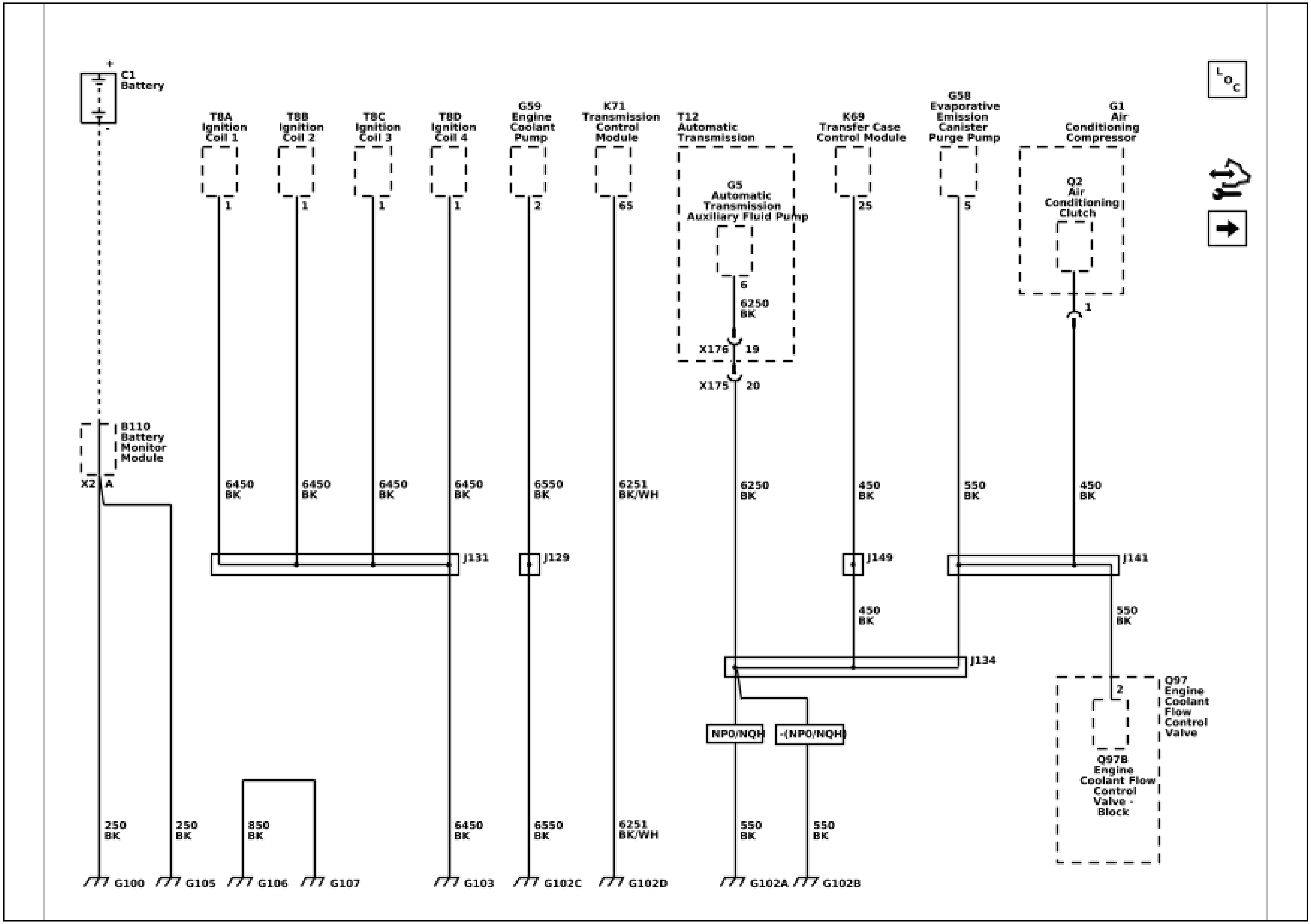

K9 Body Control Module
X51A Instrument Panel Wiring Harness Junction Block
B+
KR76 Accessory Time Delay Cutoff Relay
30
85
86
87
F23DA 15A
CB42DA 15A
X1 - 2 (Not Used)
X1 - 3 (Not Used)
X4 10
4083 GY/GN
X1 26
X3 5
451 BK/WH
G304
S38 On/Off Vehicle Switch
K56 Serial Data Gateway Module
8
3558 GN/BK
X2 15
7
3559 BK/GY
X2 5
1620Ω
5110Ω
ENGINE START/STOP
F6DA
X2 5
5723 BU/GN
4
X2 16
5720 BN/BK
2
X3 19
5719 BU/BK
1
3
2151 BK/WH
G200
Interior Lights Dimming Schematics
6817 YE
5

6853116

Power Moding Schematics (Ignition Main Relay)

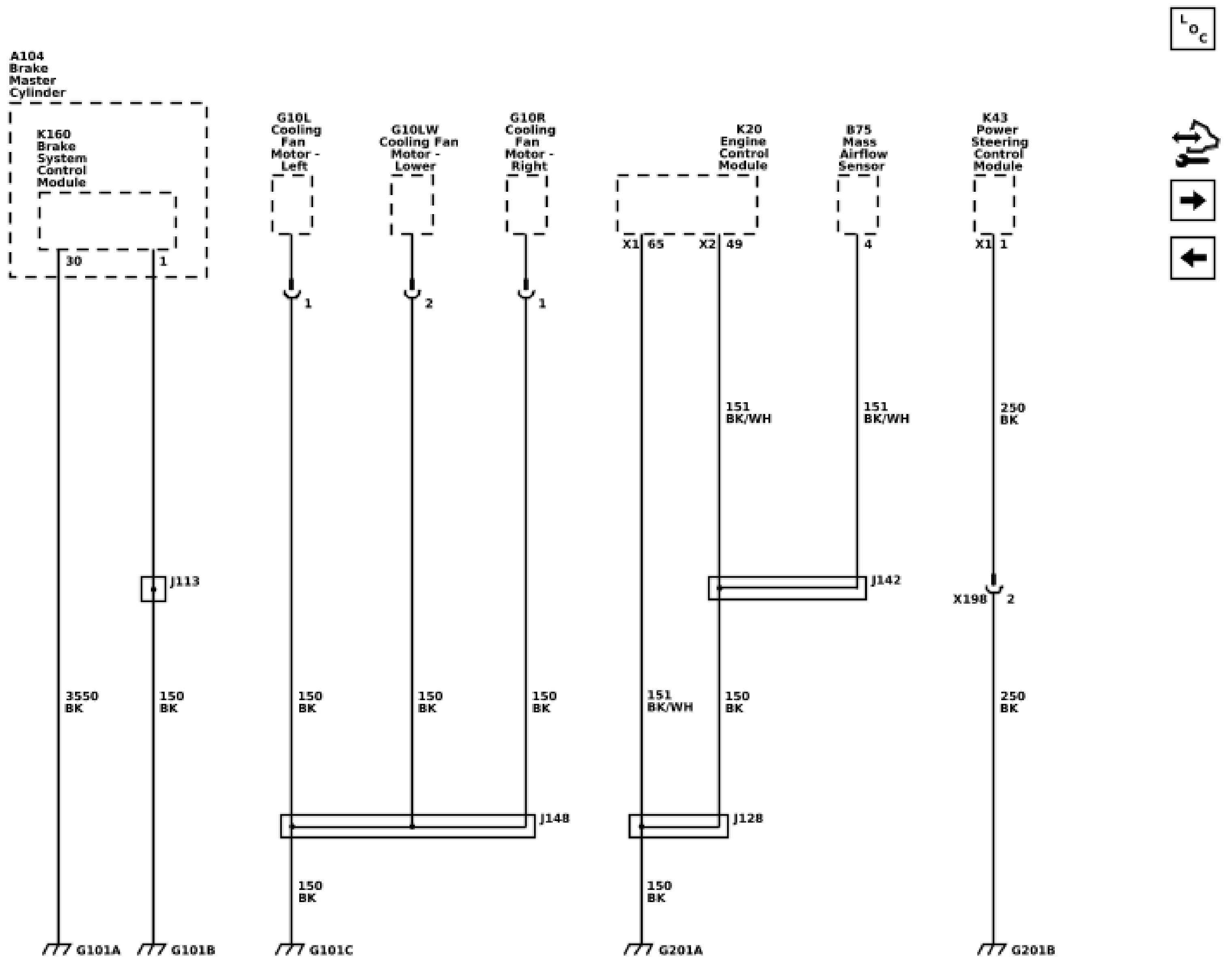

6853117
F26DA
K9 Body Control Module
X4 5
5199 GN/VT
J228
F26DA
K56 Serial Data Gateway Module
X2 7
5199 GN/VT
5199 GN/VT
X1 19
X51A Instrument Panel Wiring Harness Junction Block
B+
KR73 Ignition Main Relay
F18DA 10A
F19DA 15A
F15DA 10A
F14DA 15A
F12DA 10A
X3 5
451 BK/WH
G104

Ground Distribution Schematics (G100, G102A, G102B, G102C, G102D, G103, G105, G106, and G107)


C1 Battery
+
-
B110 Battery Monitor Module
X2 A
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
G59 Engine Coolant Pump
K71 Transmission Control Module
T12 Automatic Transmission
G5 Automatic Transmission Auxiliary Fluid Pump
K69 Transfer Case Control Module
G58 Evaporative Emission Canister Purge Pump
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
1
1
1
1
2
65
6
6250 BK
X176 19
X175 20
25
5
1
6450 BK
6450 BK
6450 BK
6450 BK
6550 BK
6251 BK/WH
6250 BK
450 BK
550 BK
450 BK
J131
J129
J149
J141
450 BK
550 BK
J134
Q97 Engine Coolant Flow Control Valve
2
Q97B Engine Coolant Flow Control Valve - Block
NP0/NQH
-(NP0/NQH)
250 BK
250 BK
850 BK
6450 BK
6550 BK
6251 BK/WH
550 BK
550 BK
G100
G105
G106
G107
G103
G102C
G102D
G102A
G102B
LOC

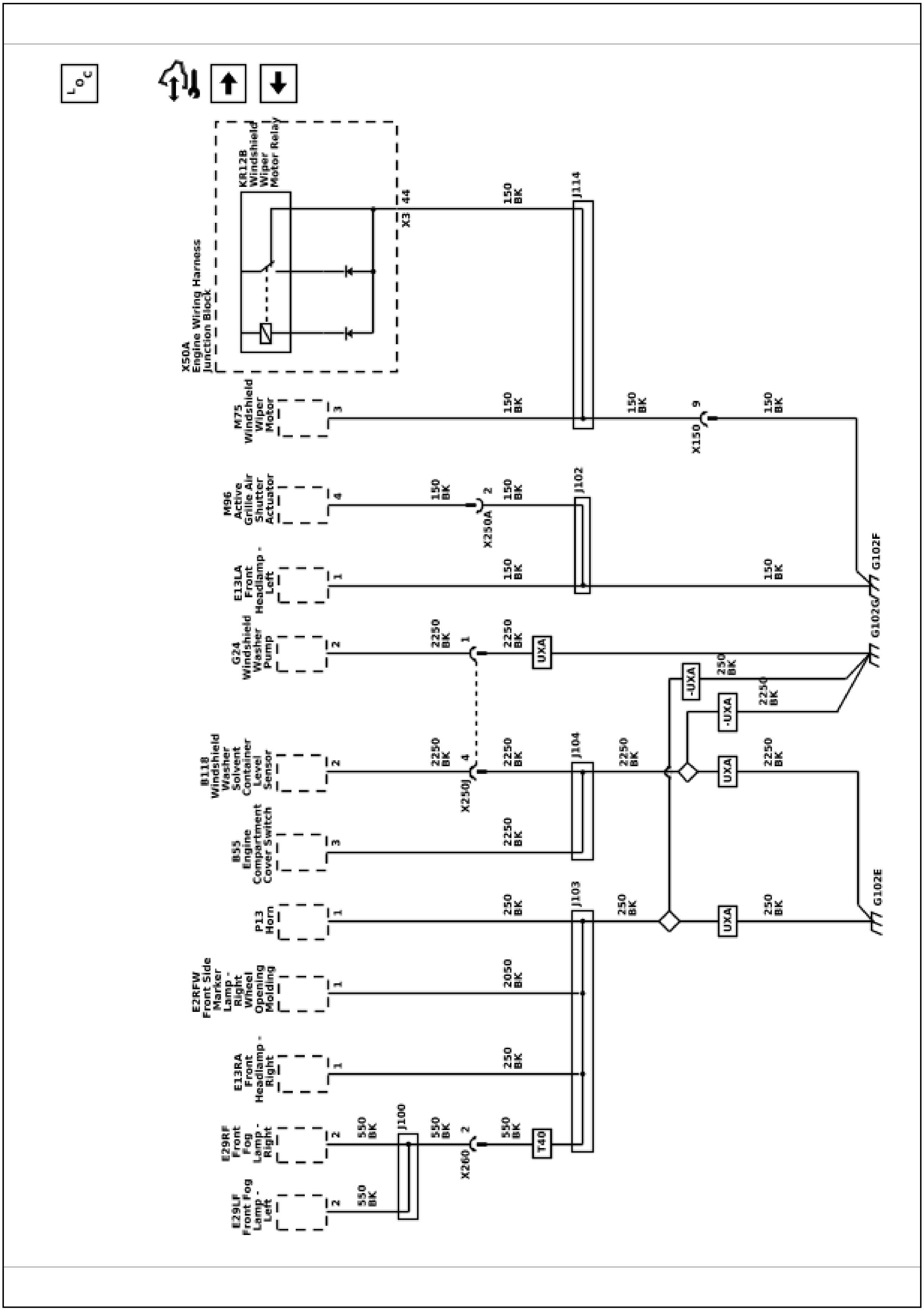
6853025

Ground Distribution Schematics (G101A, G101B, G101C, G201A, and G201B)

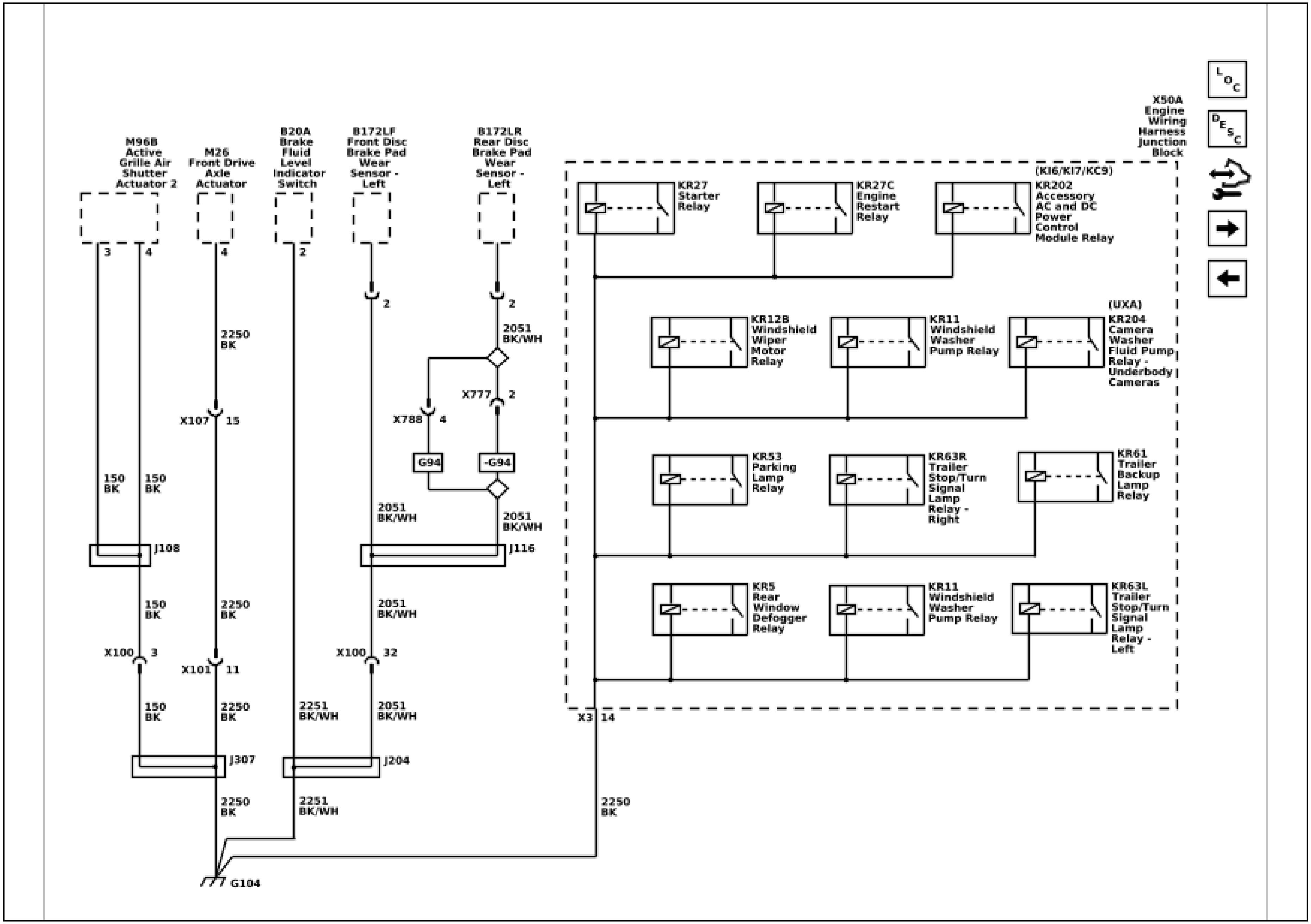

A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
30
1
G10L
Cooling
Fan
Motor -
Left
1
G10LW
Cooling Fan
Motor -
Lower
2
G10R
Cooling
Fan
Motor -
Right
1
K20
Engine
Control
Module
X1 65
X2 49
B75
Mass
Airflow
Sensor
4
K43
Power
Steering
Control
Module
X1 1
151
BK/WH
151
BK/WH
250
BK
J113
J142
X198 2
3550
BK
150
BK
150
BK
150
BK
150
BK
151
BK/WH
150
BK
250
BK
J148
J128
150
BK
150
BK
G101A
G101B
G101C
G201A
G201B

6853026

Ground Distribution Schematics (G102G,G102E and G102F)

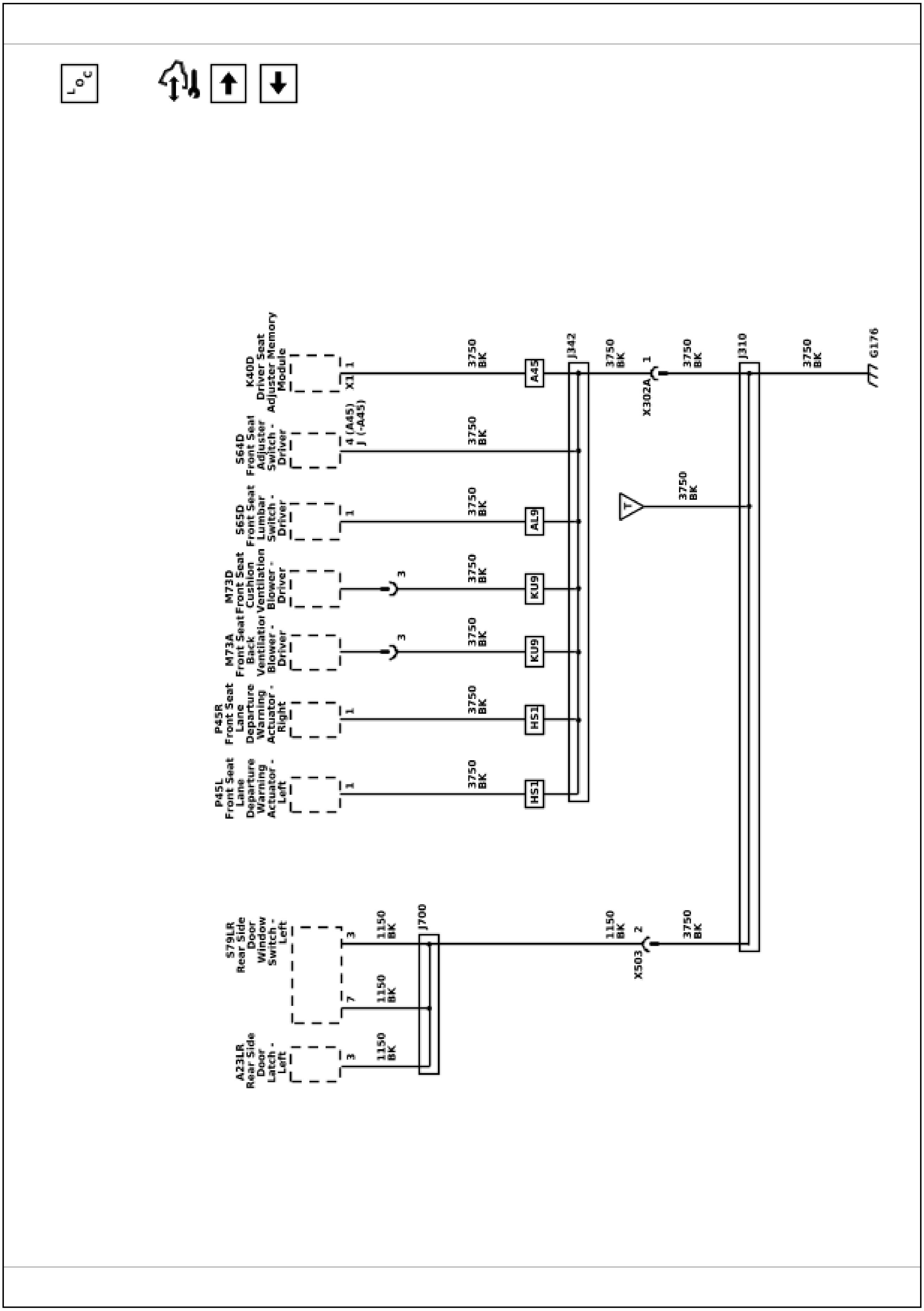

6853027
X50A Engine Wiring Harness Junction Block
KR128 Windshield Wiper Motor Relay
X3 44
150 BK
J114
M75 Windshield Wiper Motor
3
X150
9
M96 Active Grille Air Shutter Actuator
4
X250A
2
J102
E13LA Front Headlamp - Left
1
G102F
G102G
G24 Windshield Washer Pump
2
2250 BK
UXA
-UXA
250 BK
B118 Windshield Washer Solvent Container Level Sensor
X250J
J104
B55 Engine Compartment Cover Switch
P13 Horn
J103
G102E
E2RFW Front Side Marker Lamp - Right Wheel Opening Molding
2050 BK
E13RA Front Headlamp - Right
E29RF Front Fog Lamp - Right
550 BK
J100
X260
T40
E29LF Front Fog Lamp - Left

Ground Distribution Schematics (G104)


X50A Engine Wiring Harness Junction Block
KR27 Starter Relay
KR27C Engine Restart Relay
(KI6/KI7/KC9)
KR202 Accessory AC and DC Power Control Module Relay
KR12B Windshield Wiper Motor Relay
KR11 Windshield Washer Pump Relay
(UXA)
KR204 Camera Washer Fluid Pump Relay - Underbody Cameras
KR53 Parking Lamp Relay
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR61 Trailer Backup Lamp Relay
KR5 Rear Window Defogger Relay
KR11 Windshield Washer Pump Relay
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
X3 14
2250 BK
M96B Active Grille Air Shutter Actuator 2
3
4
150 BK
150 BK
J108
150 BK
X100 3
150 BK
J307
M26 Front Drive Axle Actuator
4
2250 BK
X107 15
2250 BK
X101 11
2250 BK
2250 BK
B20A Brake Fluid Level Indicator Switch
2
2251 BK/WH
J204
2251 BK/WH
B172LF Front Disc Brake Pad Wear Sensor - Left
2
2051 BK/WH
J116
2051 BK/WH
X100 32
2051 BK/WH
B172LR Rear Disc Brake Pad Wear Sensor - Left
2
2051 BK/WH
X777 2
X788 4
G94
-G94
2051 BK/WH
G104

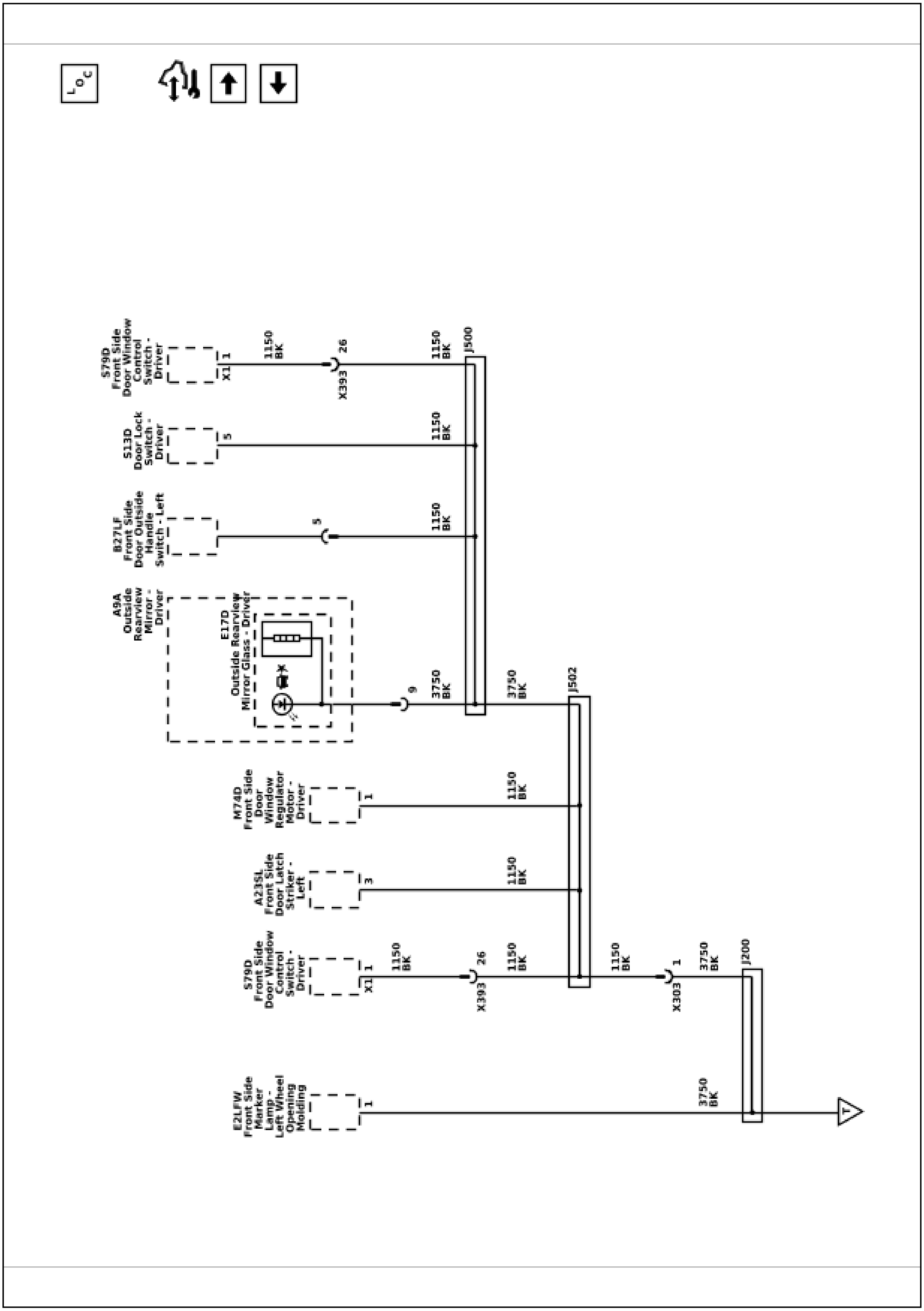
6853028

Ground Distribution Schematics (G176 1 of 2)


P45L Front Seat Lane Departure Warning Actuator - Left
P45R Front Seat Lane Departure Warning Actuator - Right
M73A Front Seat Back Ventilation Blower - Driver
M73D Front Seat Cushion Ventilation Blower - Driver
S65D Front Seat Lumbar Switch - Driver
S64D Front Seat Adjuster Switch - Driver
K40D Driver Seat Adjuster Memory Module
X1 1
4 (A45)
J (-A45)
1
3
3750
BK
HS1
KU9
AL9
A45
J342
X302A
J310
T
G176
A23LR Rear Side Door Latch - Left
S79LR Rear Side Door Window Switch - Left
7
1150
BK
J700
X503
2

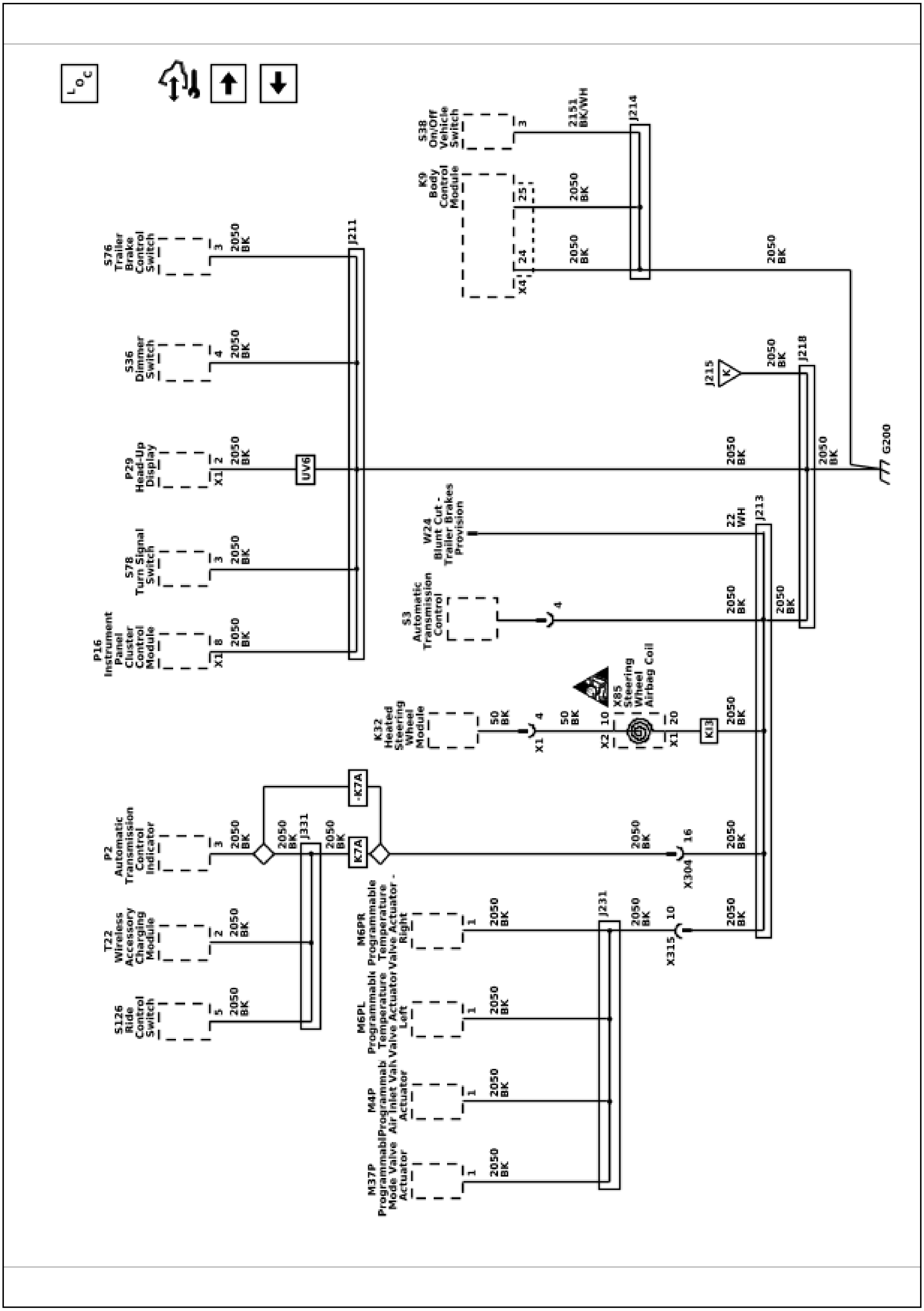
6853029

Ground Distribution Schematics (G176 2 of 2)

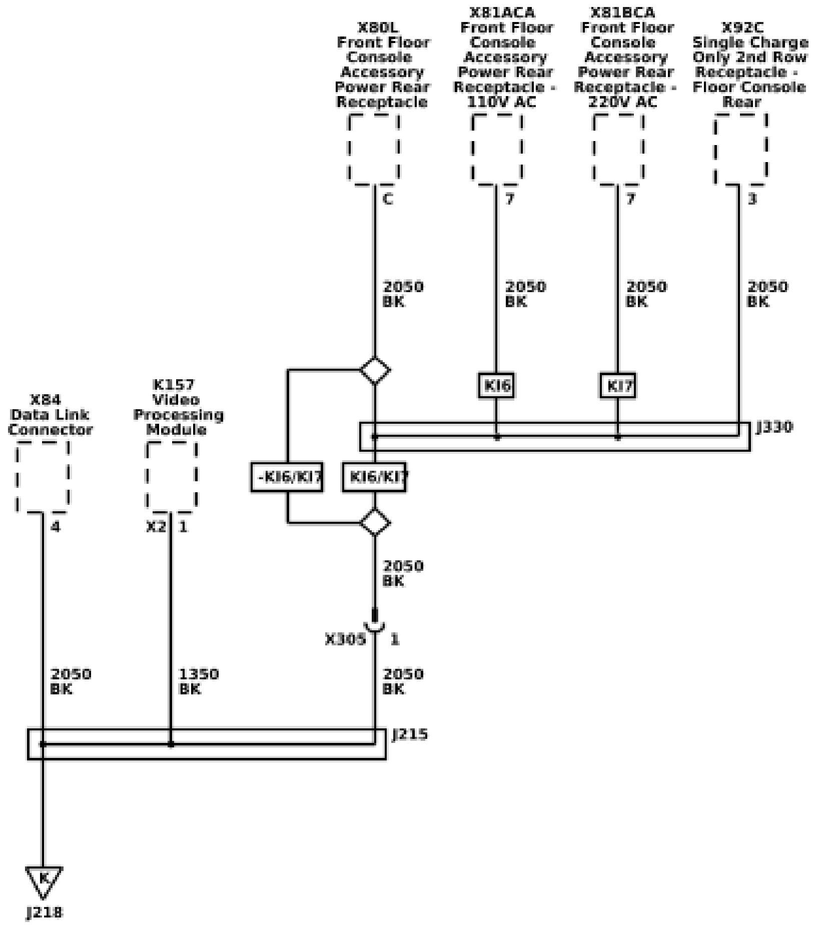

S79D Front Side Door Window Control Switch - Driver
X1 1
1150 BK
X393 26
1150 BK
J500
S13D Door Lock Switch - Driver
5
1150 BK
B27LF Front Side Door Outside Handle Switch - Left
5
1150 BK
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
9
3750 BK
3750 BK
J502
M74D Front Side Door Window Regulator Motor - Driver
1
1150 BK
A23SL Front Side Door Latch Striker - Left
3
1150 BK
S79D Front Side Door Window Control Switch - Driver
X1 1
1150 BK
X393 26
1150 BK
1150 BK
X303 1
3750 BK
J200
E2LFW Front Side Marker Lamp - Left Wheel Opening Molding
1
3750 BK
T

6853030

Ground Distribution Schematics (G200 1 of 2)

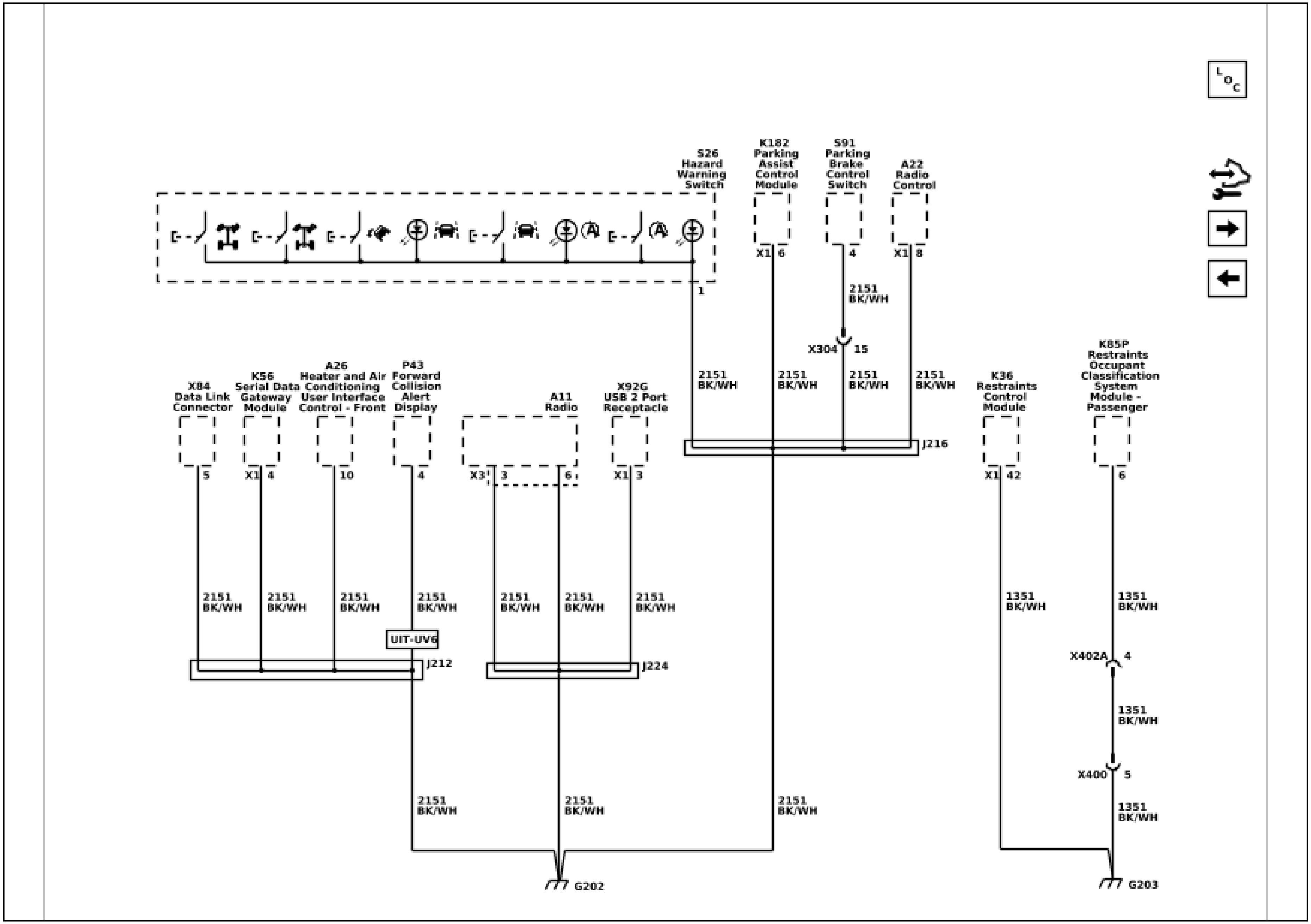

6853031
S76 Trailer Brake Control Switch
3
2050 BK
J211
S36 Dimmer Switch
4
2050 BK
P29 Head-Up Display
X1 2
2050 BK
UV6
S78 Turn Signal Switch
3
2050 BK
P16 Instrument Panel Cluster Control Module
X1 8
2050 BK
P2 Automatic Transmission Control Indicator
3
2050 BK
2050 BK
J331
2050 BK
K7A
-K7A
T22 Wireless Accessory Charging Module
2
2050 BK
S126 Ride Control Switch
5
2050 BK
S38 On/Off Vehicle Switch
3
2151 BK/WH
J214
K9 Body Control Module
25
24
X4
2050 BK
2050 BK
2050 BK
J215
K
2050 BK
J218
2050 BK
2050 BK
G200
W24 Blunt Cut - Trailer Brakes Provision
22 WH
J213
S3 Automatic Transmission Control
4
2050 BK
2050 BK
K32 Heated Steering Wheel Module
50 BK
X1 4
50 BK
X2 10
X85 Steering Wheel Airbag Coil
X1 20
KI3
2050 BK
2050 BK
X304 16
2050 BK
M6PR Programmable Temperature Valve Actuator - Right
1
2050 BK
J231
2050 BK
X315 10
2050 BK
M6PL Programmable Temperature Valve Actuator - Left
1
2050 BK
M4P Programmable Air Inlet Valve Actuator
1
2050 BK
M37P Programmable Mode Valve Actuator
1
2050 BK

Ground Distribution Schematics (G200 2 of 2)


X80L
Front Floor Console Accessory Power Rear Receptacle
X81ACA
Front Floor Console Accessory Power Rear Receptacle - 110V AC
X81BCA
Front Floor Console Accessory Power Rear Receptacle - 220V AC
X92C
Single Charge Only 2nd Row Receptacle - Floor Console Rear
C
7
7
3
2050
BK
2050
BK
2050
BK
2050
BK
KI6
KI7
J330
-KI6/KI7
KI6/KI7
2050
BK
X305
1
2050
BK
J215
K157
Video Processing Module
X2
1
1350
BK
X84
Data Link Connector
4
2050
BK
K
J218

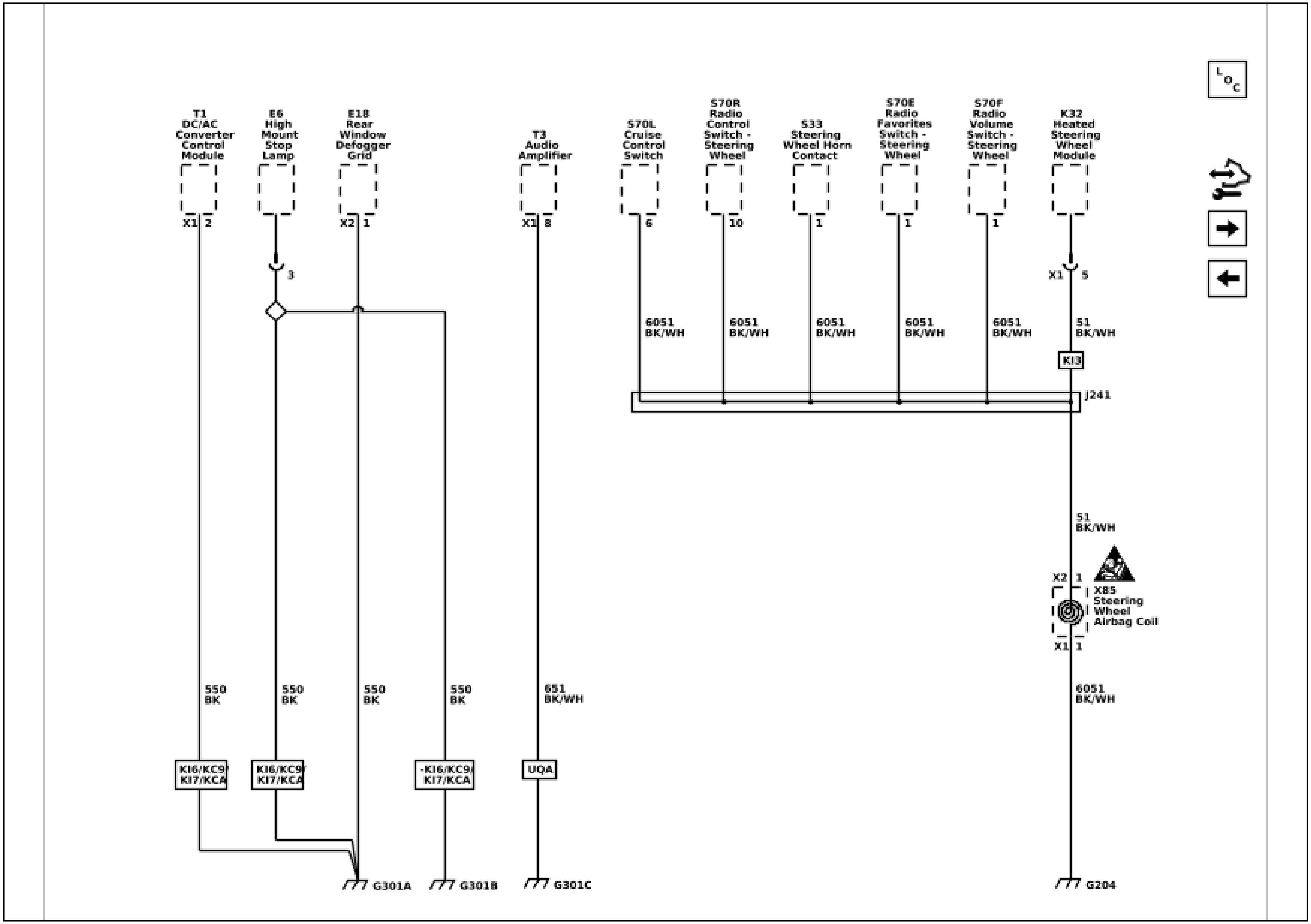
6853032

Ground Distribution Schematics (G202 and G203)


S26
Hazard
Warning
Switch
1
K182
Parking
Assist
Control
Module
X1 6
S91
Parking
Brake
Control
Switch
4
2151
BK/WH
X304 15
A22
Radio
Control
X1 8
J216
K36
Restraints
Control
Module
X1 42
K85P
Restraints
Occupant
Classification
System
Module -
Passenger
6
1351
BK/WH
X402A 4
X400 5
G203
X84
Data Link
Connector
5
K56
Serial Data
Gateway
Module
X1 4
A26
Heater and Air
Conditioning
User Interface
Control - Front
10
P43
Forward
Collision
Alert
Display
4
A11
Radio
X3 3
6
X92G
USB 2 Port
Receptacle
X1 3
UIT-UV6
J212
J224
G202

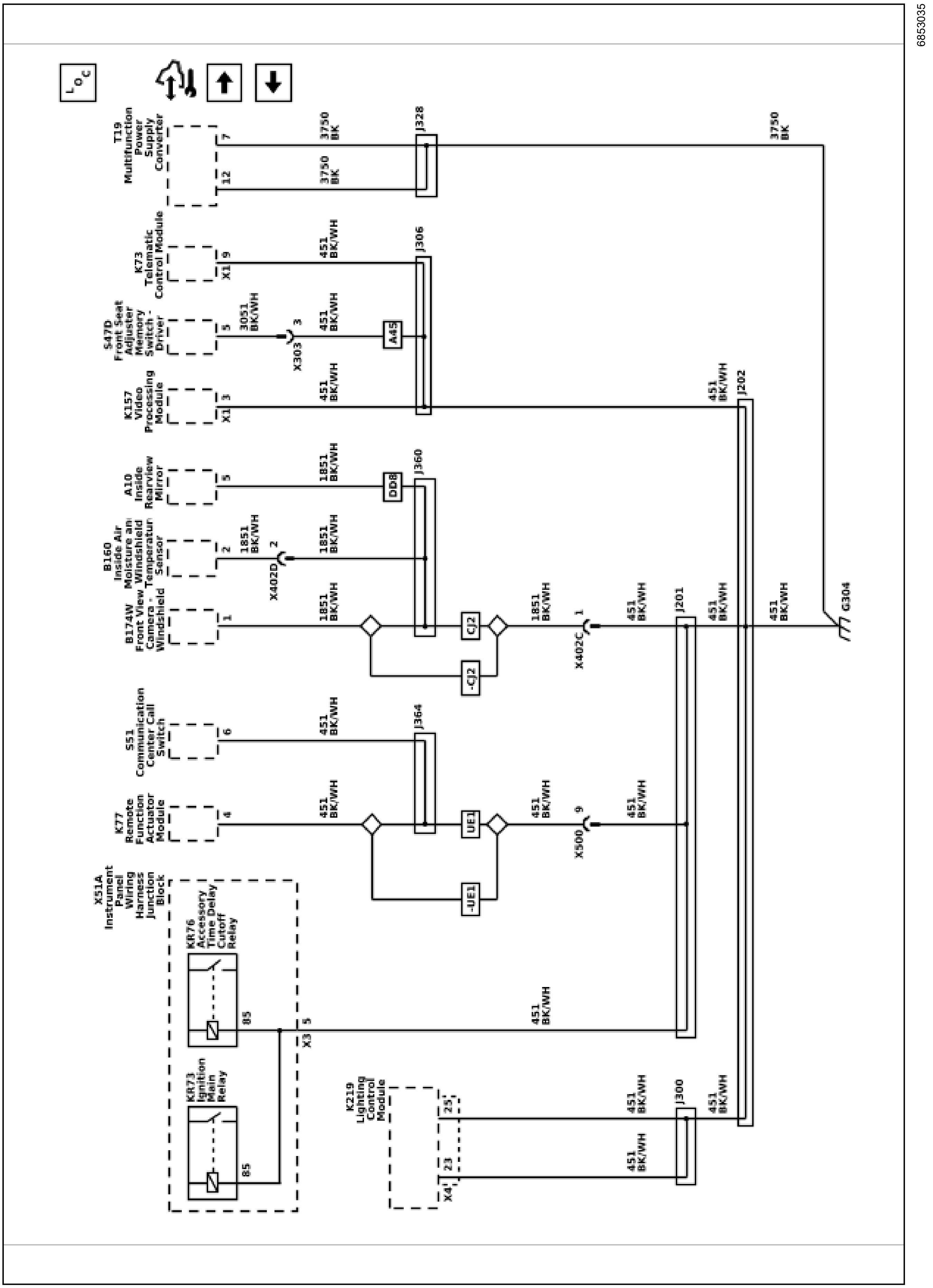
6853033

Ground Distribution Schematics (G204, G301A, G301B, and G301C)

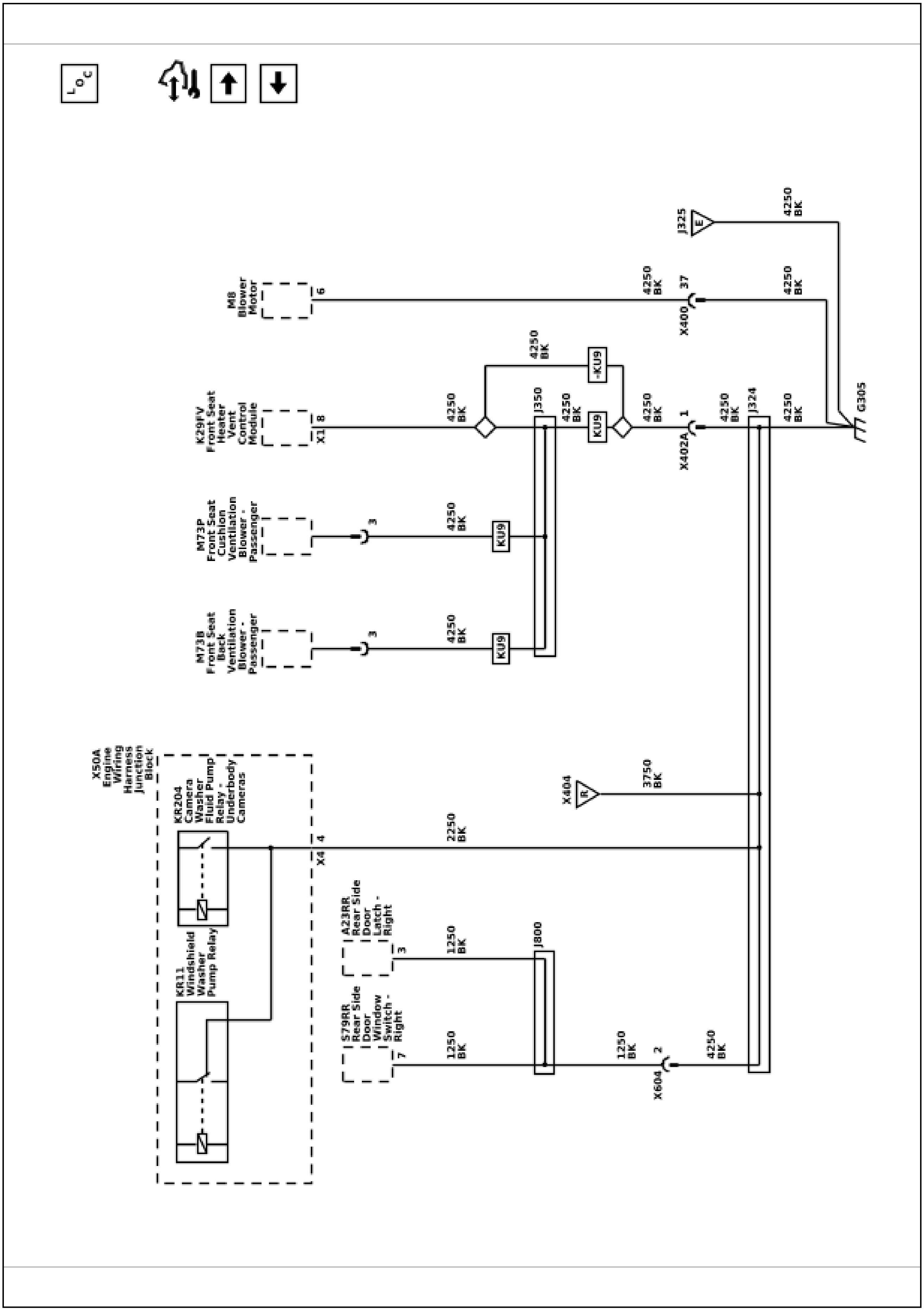

T1 DC/AC Converter Control Module
X1 2
E6 High Mount Stop Lamp
3
E18 Rear Window Defogger Grid
X2 1
T3 Audio Amplifier
X1 8
S70L Cruise Control Switch
6
S70R Radio Control Switch - Steering Wheel
10
S33 Steering Wheel Horn Contact
1
S70E Radio Favorites Switch - Steering Wheel
1
S70F Radio Volume Switch - Steering Wheel
1
K32 Heated Steering Wheel Module
X1 5
6051 BK/WH
51 BK/WH
KI3
J241
51 BK/WH
X2 1
X85 Steering Wheel Airbag Coil
X1 1
6051 BK/WH
550 BK
651 BK/WH
KI6/KC9/ KI7/KCA
-KI6/KC9/ KI7/KCA
UQA
G301A
G301B
G301C
G204

6853034

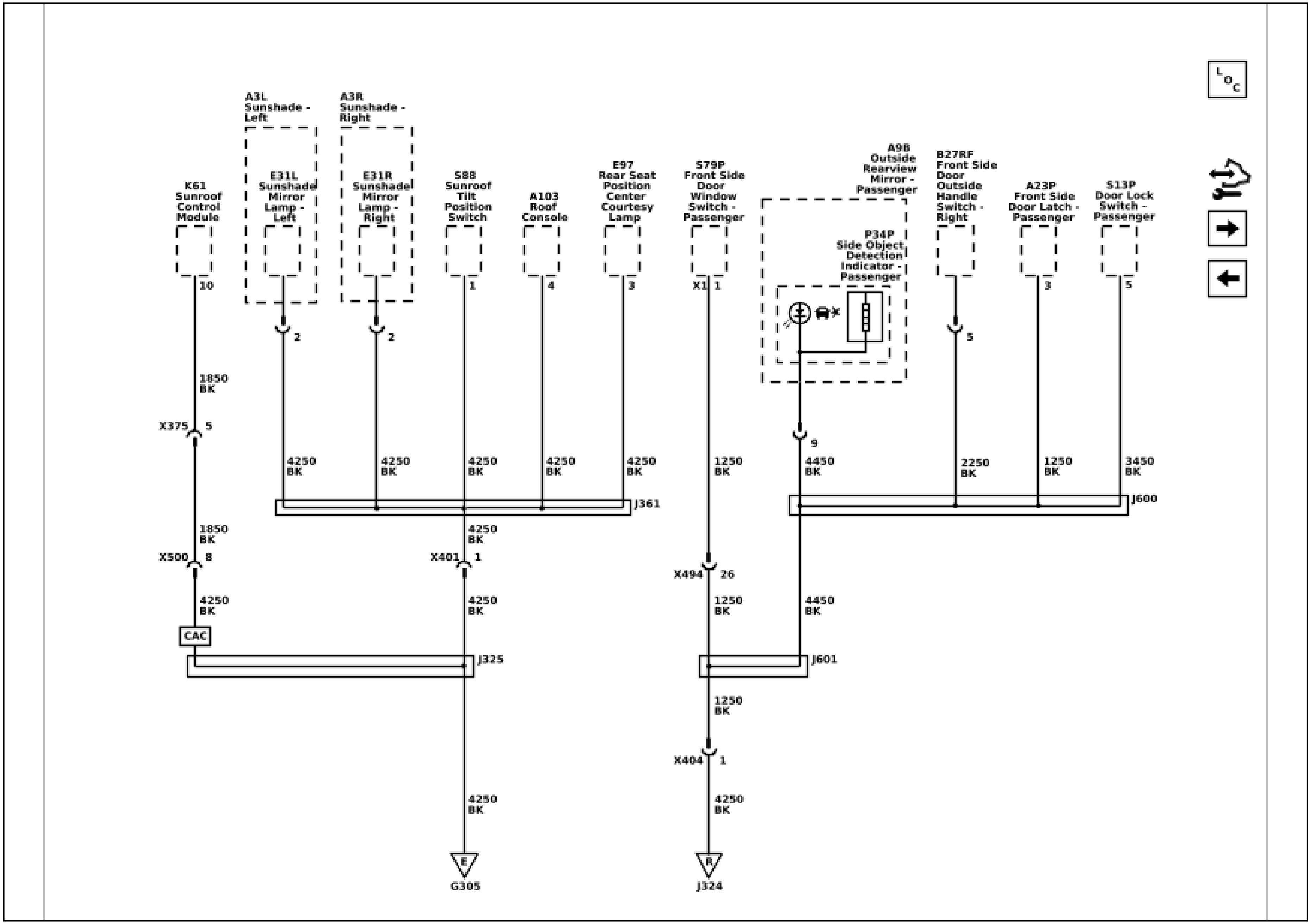
Ground Distribution Schematics (G304)


6853035
T19 Multifunction Power Supply Converter
7
12
3750 BK
J328
K73 Telematic Control Module
X1 9
451 BK/WH
J306
S47D Front Seat Adjuster Memory Switch - Driver
5
3051 BK/WH
X303
3
A45
K157 Video Processing Module
X1 3
J202
A10 Inside Rearview Mirror
1851 BK/WH
DD8
J360
B160 Inside Air Moisture and Windshield Temperature Sensor
2
X402D
B174W Front View Camera - Windshield
1
CJ2
-CJ2
X402C
J201
G304
S51 Communication Center Call Switch
6
J364
K77 Remote Function Actuator Module
4
UE1
-UE1
X500
9
X51A Instrument Panel Wiring Harness Junction Block
KR76 Accessory Time Delay Cutoff Relay
85
X3 5
KR73 Ignition Main Relay
K219 Lighting Control Module
25
23
X4
J300

Ground Distribution Schematics (G305 1 of 2)

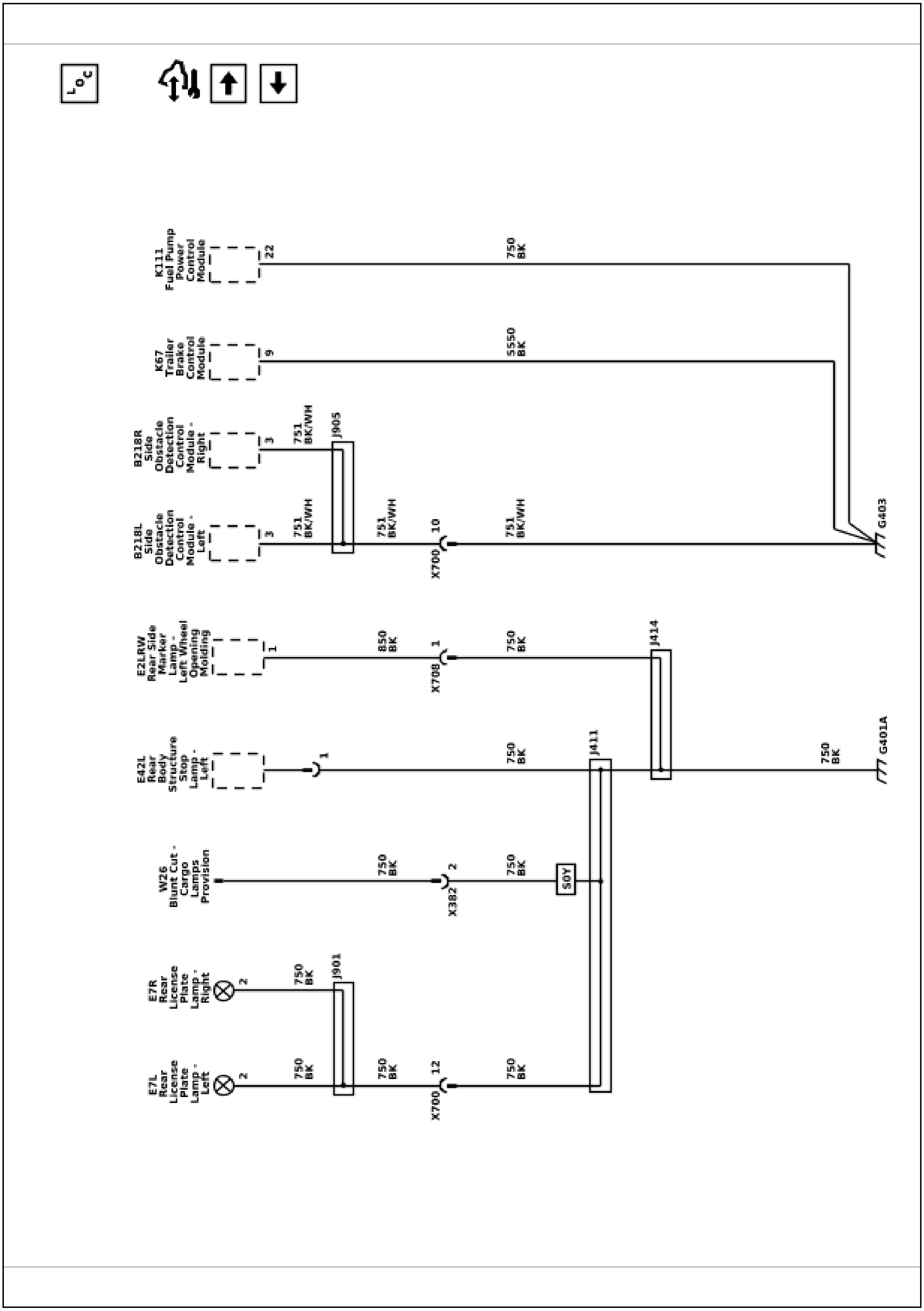

6853036
M8 Blower Motor
6
4250 BK
37
X400
J325
E
K29FV Front Seat Heater Vent Control Module
X1 8
J350
KU9
-KU9
1
X402A
J324
G305
M73P Front Seat Cushion Ventilation Blower - Passenger
3
M73B Front Seat Back Ventilation Blower - Passenger
X50A Engine Wiring Harness Junction Block
KR204 Camera Washer Fluid Pump Relay - Underbody Cameras
KR11 Windshield Washer Pump Relay
X4 4
2250 BK
X404
R
3750 BK
A23RR Rear Side Door Latch - Right
S79RR Rear Side Door Window Switch - Right
7
1250 BK
J800
2
X604

Ground Distribution Schematics (G305 2 of 2)


K61 Sunroof Control Module
10
1850 BK
X375 5
1850 BK
X500 8
4250 BK
CAC
A3L Sunshade - Left
E31L Sunshade Mirror Lamp - Left
2
4250 BK
A3R Sunshade - Right
E31R Sunshade Mirror Lamp - Right
2
4250 BK
S88 Sunroof Tilt Position Switch
1
4250 BK
A103 Roof Console
4
4250 BK
E97 Rear Seat Position Center Courtesy Lamp
3
4250 BK
J361
4250 BK
X401 1
4250 BK
J325
4250 BK
E
G305
S79P Front Side Door Window Switch - Passenger
X1 1
1250 BK
X494 26
1250 BK
J601
1250 BK
X404 1
4250 BK
R
J324
A9B Outside Rearview Mirror - Passenger
P34P Side Object Detection Indicator - Passenger
9
4450 BK
4450 BK
B27RF Front Side Door Outside Handle Switch - Right
5
2250 BK
A23P Front Side Door Latch - Passenger
3
1250 BK
S13P Door Lock Switch - Passenger
5
3450 BK
J600
L O C

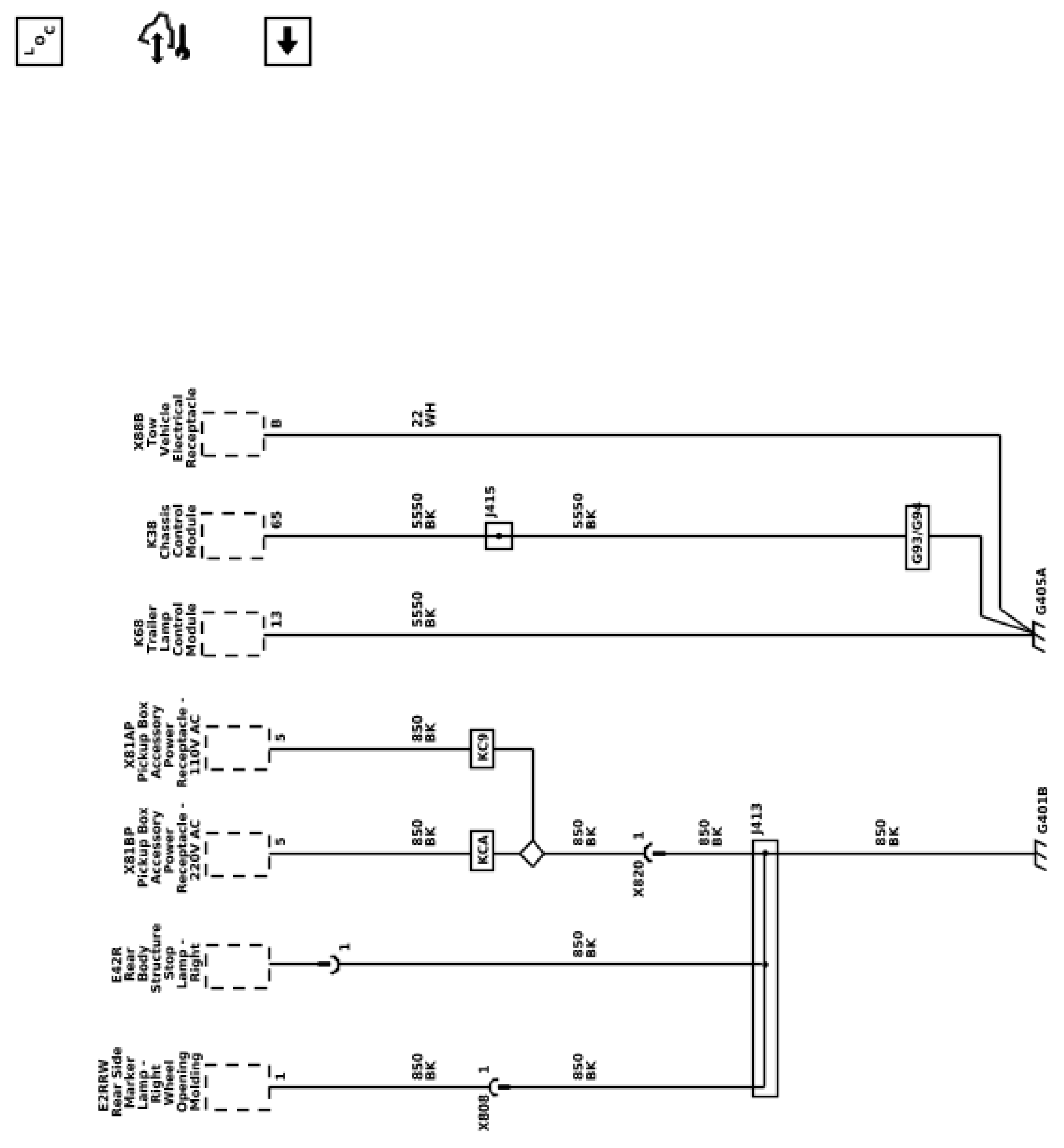
6853037

Ground Distribution Schematics (G401A and G403)

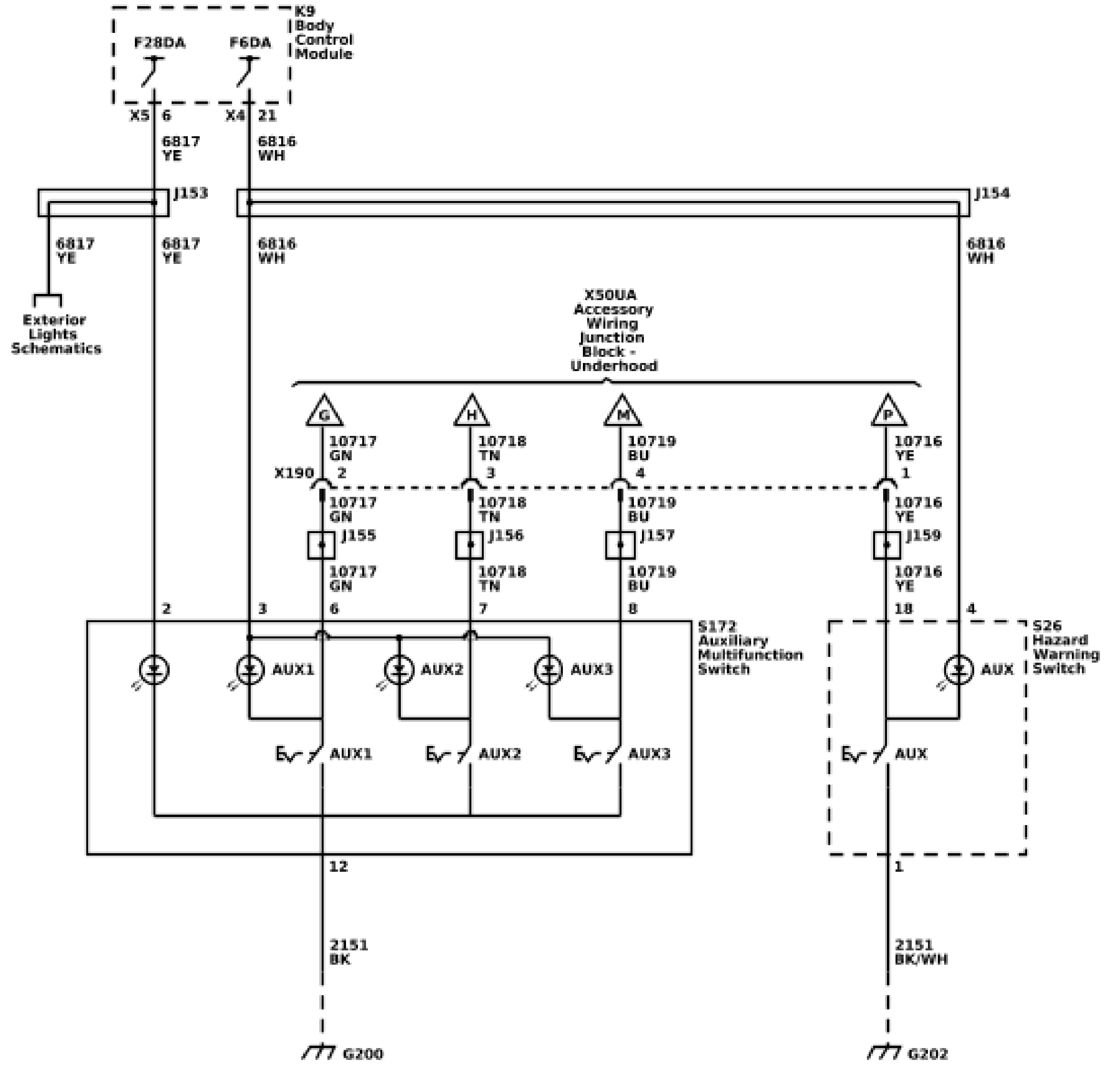

K111
Fuel Pump
Power
Control
Module
22
750
BK
K67
Trailer
Brake
Control
Module
9
5550
BK
B218R
Side
Obstacle
Detection
Control
Module -
Right
3
751
BK/WH
J905
B218L
Side
Obstacle
Detection
Control
Module -
Left
3
751
BK/WH
751
BK/WH
10
X700
751
BK/WH
G403
E2LRW
Rear Side
Marker
Lamp -
Left Wheel
Opening
Molding
1
850
BK
1
X708
750
BK
J414
E42L
Rear
Body
Structure
Stop
Lamp -
Left
1
750
BK
J411
750
BK
G401A
W26
Blunt Cut -
Cargo
Lamps
Provision
750
BK
2
X382
750
BK
S0Y
E7R
Rear
License
Plate
Lamp -
Right
2
750
BK
J901
E7L
Rear
License
Plate
Lamp -
Left
2
750
BK
750
BK
12
X700
750
BK

6853038

Ground Distribution Schematics (G401B, G405A, and G405B)

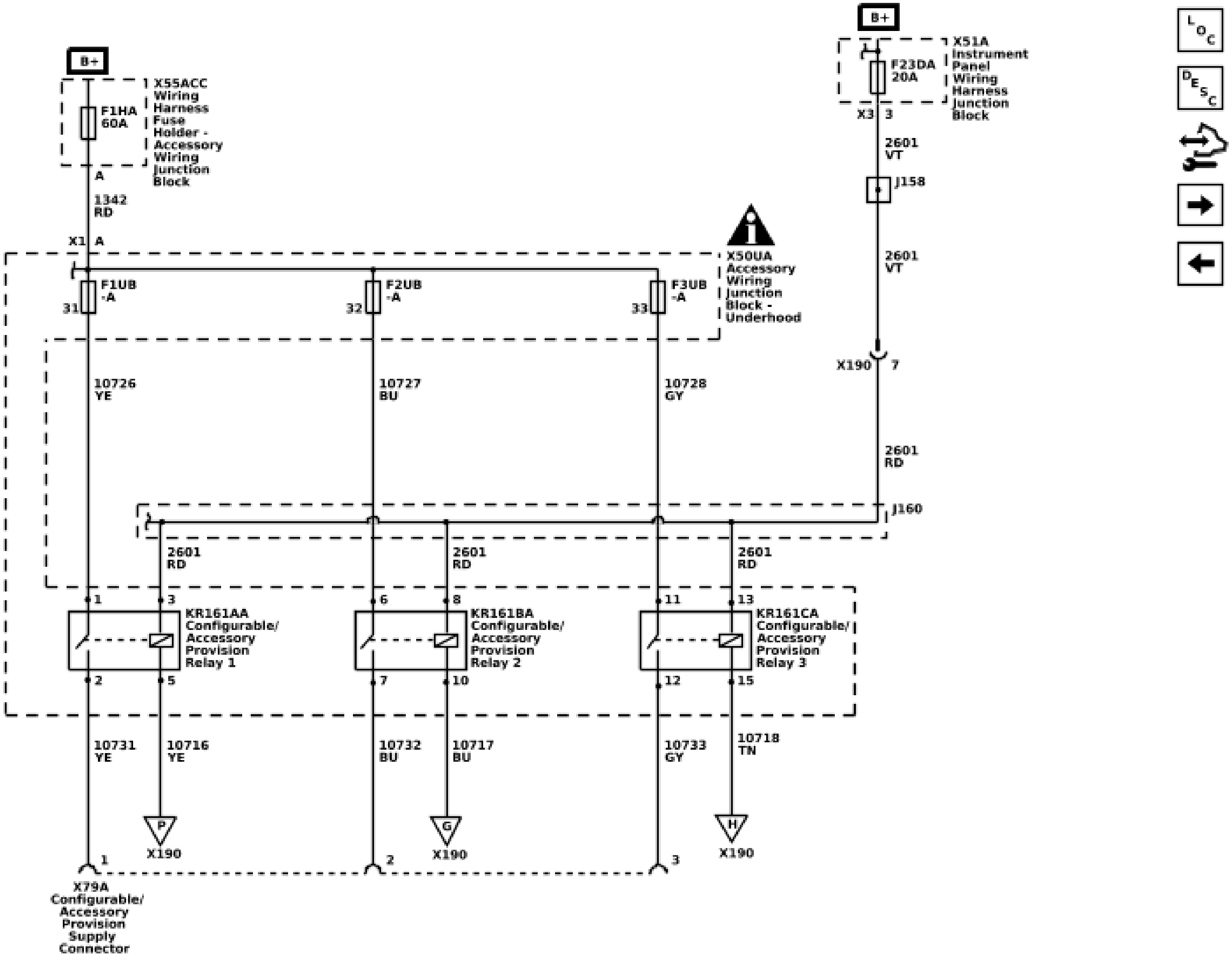

6853039
X88B Tow Vehicle Electrical Receptacle
8
22 WH
K38 Chassis Control Module
65
5550 BK
J415
5550 BK
G93/G94
K68 Trailer Lamp Control Module
13
5550 BK
G405A
X81AP Pickup Box Accessory Power Receptacle - 110V AC
5
850 BK
KC9
X81BP Pickup Box Accessory Power Receptacle - 220V AC
5
850 BK
KCA
850 BK
1
X820
850 BK
J413
850 BK
G401B
E42R Rear Body Structure Stop Lamp - Right
1
850 BK
E2RRW Rear Side Marker Lamp - Right Wheel Opening Molding
1
850 BK
1
X808
850 BK

Upfitter Provision Schematics (Accessory Wiring Junction Block Control Switches (VBP))

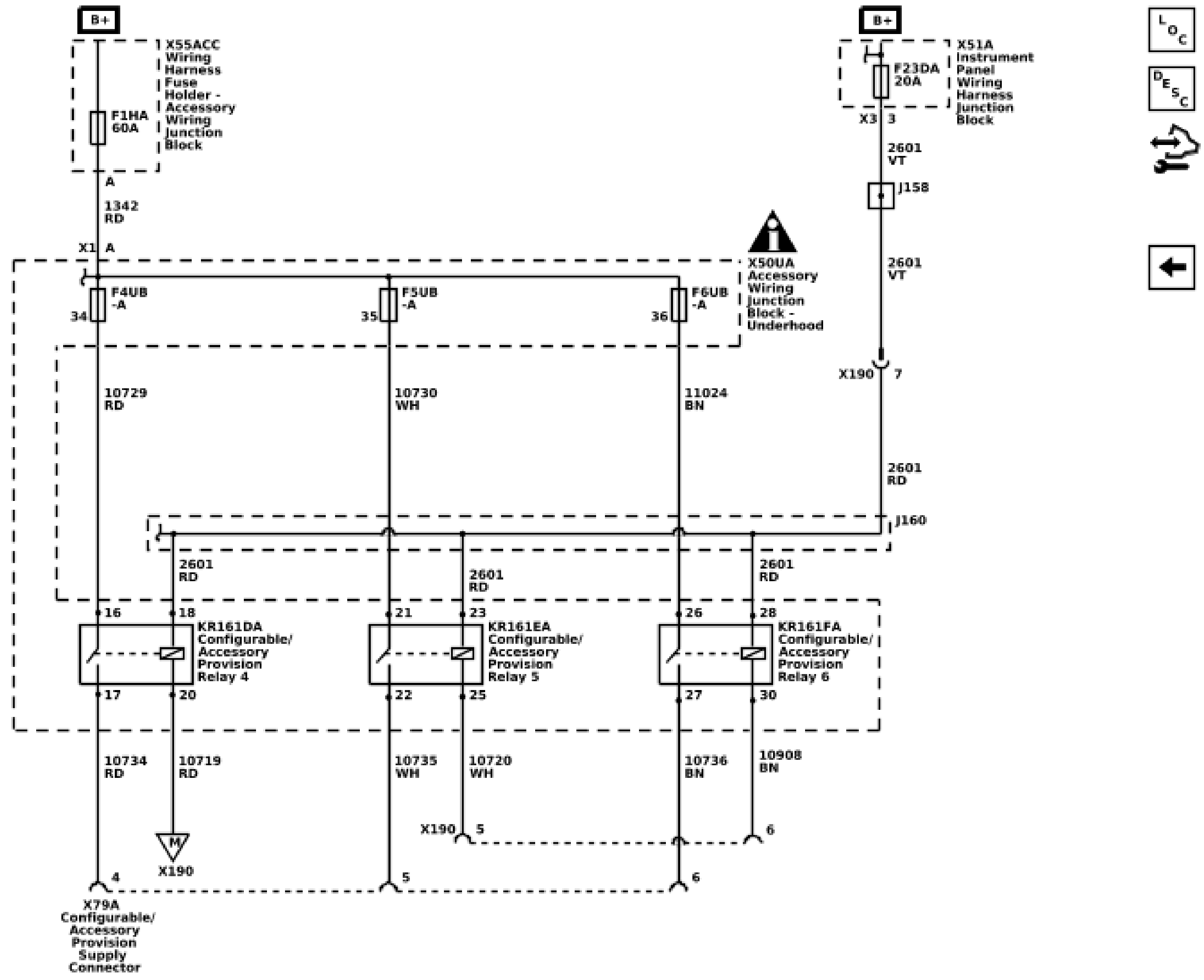

K9
Body
Control
Module
F28DA
F6DA
X5 6
X4 21
6817
YE
6816
WH
J153
J154
6817
YE
6817
YE
6816
WH
6816
WH
Exterior
Lights
Schematics
X50UA
Accessory
Wiring
Junction
Block -
Underhood
G
H
M
P
10717
GN
10718
TN
10719
BU
10716
YE
X190 2
3
4
1
J155
J156
J157
J159
2
3
6
7
8
18
4
S172
Auxiliary
Multifunction
Switch
S26
Hazard
Warning
Switch
AUX1
AUX2
AUX3
AUX
12
1
2151
BK
2151
BK/WH
G200
G202

6982069

Upfitter Provision Schematics (Configurable/Accessory Provision 1, 2 and 3 (VBP))

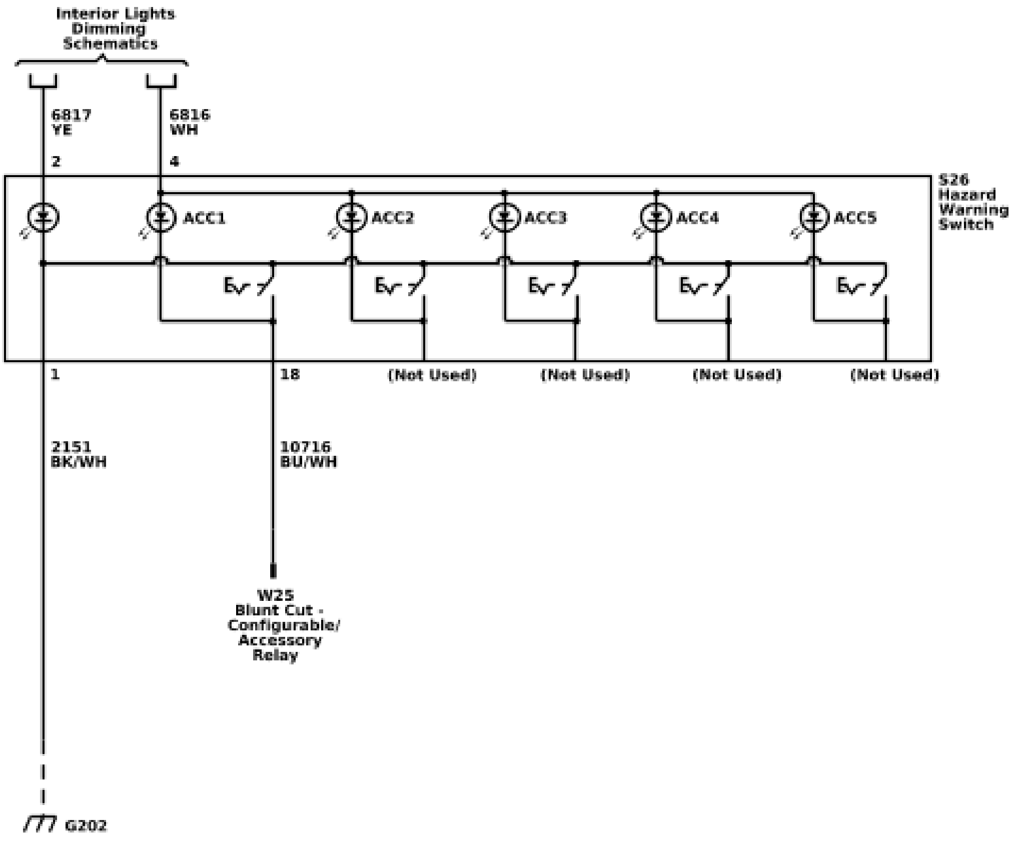

B+
X55ACC Wiring Harness Fuse Holder - Accessory Wiring Junction Block
F1HA 60A
A
1342 RD
X1 A
X50UA Accessory Wiring Junction Block - Underhood
F1UB -A
31
F2UB -A
32
F3UB -A
33
10726 YE
10727 BU
10728 GY
B+
X51A Instrument Panel Wiring Harness Junction Block
1
F23DA 20A
X3 3
2601 VT
J158
2601 VT
X190 7
2601 RD
J160
2601 RD
2601 RD
2601 RD
1
3
KR161AA Configurable/ Accessory Provision Relay 1
2
5
6
8
KR161BA Configurable/ Accessory Provision Relay 2
7
10
11
13
KR161CA Configurable/ Accessory Provision Relay 3
12
15
10731 YE
10716 YE
10732 BU
10717 BU
10733 GY
10718 TN
P
X190
G
X190
H
X190
1
2
3
X79A Configurable/ Accessory Provision Supply Connector
6982070

Upfitter Provision Schematics (Configurable/Accessory Provision 4, 5 and 6 (VBP))


B+
X55ACC Wiring Harness Fuse Holder - Accessory Wiring Junction Block
F1HA 60A
A
1342 RD
X1 A
F4UB -A
34
F5UB -A
35
F6UB -A
36
X50UA Accessory Wiring Junction Block - Underhood
10729 RD
10730 WH
11024 BN
B+
X51A Instrument Panel Wiring Harness Junction Block
F23DA 20A
X3 3
2601 VT
J158
2601 VT
X190 7
2601 RD
J160
2601 RD
2601 RD
2601 RD
16
18
KR161DA Configurable/ Accessory Provision Relay 4
17
20
21
23
KR161EA Configurable/ Accessory Provision Relay 5
22
25
26
28
KR161FA Configurable/ Accessory Provision Relay 6
27
30
10734 RD
10719 RD
10735 WH
10720 WH
10736 BN
10908 BN
M
X190
X190 5
6
4
5
6
X79A Configurable/ Accessory Provision Supply Connector
L O C
D E S C

6982071

Upfitter Provision Schematics (Accessory Provision (-VBP))


Interior Lights Dimming Schematics
6817 YE
6816 WH
2
4
S26 Hazard Warning Switch
ACC1
ACC2
ACC3
ACC4
ACC5
1
18
(Not Used)
(Not Used)
(Not Used)
(Not Used)
2151 BK/WH
10716 BU/WH
W25 Blunt Cut - Configurable/ Accessory Relay
G202

6853153

Component Locator

Master Electrical Component List

Master Electrical Component List

Code	Name	Option	Location	Locator View	Connector End View
A3L	Sunshade - Left	DEG	In the passenger compartment, mounted to the left front of the headliner.	—	
A3R	Sunshade - Right	DEG	In the passenger compartment, mounted to the right front of the headliner.	—	
A7	Fuel Tank Fuel Pump Module	—	Under the vehicle, left side, in front of rear axle, mounted in the fuel tank.		
A9A	Outside Rearview Mirror - Driver	—	Mounted on the outside of the driver door, at front.		
A9B	Outside Rearview Mirror - Passenger	—	Mounted on the outside of the passenger door, at front.		
A10	Inside Rearview Mirror	—	In the front center of the passenger compartment, at the top center of the windshield.	• •	
A11	Radio	UXA	In the instrument panel, right side, behind the instrument panel compartment, near body.		• • • • • • • •
A16	Transfer Case Four Wheel Drive Actuator	NP0 / NQH	Under the vehicle, mounted to the rear of the transfer case.		
A22	Radio Control	—	In the passenger compartment, on the instrument panel, at center.		• •
A23LR	Rear Side Door Latch - Left	—	In the left rear door, at the middle rear.		
A23P	Front Side Door Latch - Passenger	—	In the passenger door, at the middle rear.		
A23RR	Rear Side Door Latch - Right	—	In the right rear door, at the middle rear.		
A23SL	Front Side Door Latch Striker - Left	—	In the driver door, at the middle rear.		
A26	Heater and Air Conditioning User Interface Control - Front	—	In the passenger compartment, at the center of the instrument panel, beneath A22 Radio Control		
A99	Pickup Box Endgate Latch	—	At the rear of the vehicle, within endgate.		
A103	Roof Console	DD8	In the passenger compartment, mounted to the front center of the headliner.	• •	

Code	Name	Option	Location	Locator View	Connector End View
A104	Brake Master Cylinder	—	In the front compartment, driver side rear, mounted to bulkhead.	—	—
B1	Air Conditioning Refrigerant Pressure Sensor	—	In the engine compartment.		
B5LF	Front Wheel Speed Sensor - Left	—	Behind the left front wheel, between the front side of the steering knuckle and the brake rotor.		
B5LR	Rear Wheel Speed Sensor - Left	—	Behind the left rear wheel, between the rear side of the hub and the brake rotor.		
B5RF	Front Wheel Speed Sensor - Right	—	Behind the right front wheel, between the front side of the steering knuckle and the brake rotor.		
B5RR	Rear Wheel Speed Sensor - Right	—	Behind the right rear wheel, between the rear side of the hub and the brake rotor.		
B9	Ambient Air Temperature Sensor	—	Outside the vehicle, center, behind the front bumper fascia.	—	
B10D	Sun Load and Ambient Light and Security Indicator Sensor	—	In the passenger compartment, on the top center of the instrument panel.		
B12B	Automatic Transmission Fluid Pressure Sensor	—	Inside the automatic transmission assembly.	—	
B13	Automatic Transmission Fluid Temperature Sensor	—	Inside the automatic transmission assembly.	—	
B14A	Automatic Transmission Output Speed Sensor	—	Inside the automatic transmission assembly.	—	—
B14C	Automatic Transmission Input Speed Sensor	—	Inside the automatic transmission assembly.	—	—
B14D	Automatic Transmission Intermediate Speed Sensor	—	Inside the automatic transmission assembly.	—	—
B20A	Brake Fluid Level Indicator Switch	—	In the left rear of the engine compartment, mounted to the bottom left side of the master cylinder reservoir.		
B22	Brake Pedal Position Sensor	—	In the passenger compartment, under the left side of the instrument panel, attached to the top of the brake pedal assembly.		
B23E	Camshaft Position Sensor - Exhaust	—	In the engine compartment, at the rear of the engine, mounted to the right rear of the camshaft carrier.		

Code	Name	Option	Location	Locator View	Connector End View
B23F	Camshaft Position Sensor - Intake	—	In the engine compartment, at the rear of the engine, mounted to the left rear of the camshaft carrier.		
B24	Mobile Telephone Microphone	—	In the passenger compartment, on the front center of the headliner, in the left side of the overhead console.	• •	
B26	Crankshaft Position Sensor	—	In the engine compartment, left rear, mounted to rear of engine block. Below M64 Starter Motor.		
B27LF	Front Side Door Outside Handle Switch - Left	—	Outside the vehicle, on the left front door, part of the door handle assembly - driver exterior.		
B27RF	Front Side Door Outside Handle Switch - Right	—	Outside the vehicle, on the left front door, part of the door handle assembly - passenger exterior.		
B34A	Engine Coolant Temperature Sensor 1	—	Outside of the vehicle, In the engine compartment, left side of engine block, attached to the front of Q97 Engine Coolant Flow Control Valve.		
B34B	Engine Coolant Temperature Sensor 2	—	Outside of the vehicle, In the engine compartment, right front, attached to the coolant pipe above the G59 Engine Coolant Pump.		
B34E	Engine Coolant Temperature Sensor 5	—	Outside of the vehicle, In the engine compartment, right front, attached to the coolant pipe above the G59 Engine Coolant Pump.		
B34F	Engine Coolant Temperature Sensor 6	—	Outside of the vehicle, In the engine compartment, attached to the left side of the engine block, in front of Q97 Engine Coolant Flow Control Valve.		
B36	Engine Oil Temperature Sensor	—	In the engine compartment, right side, mounted to the engine oil filter housing.		
B37B	Engine Oil Pressure Sensor	—	Outside of the vehicle, In the engine compartment, front center, mounted to the right side of the engine block, near the accessory belt drive		
B39	Air Conditioning Evaporator Air Temperature Sensor	—	In the passenger compartment, behind the instrument panel, mounted in the HVAC housing.		
B46	Fuel Level Sensor	—	Under the vehicle, inside the fuel tank, part of the fuel pump and level sensor assembly.	—	—
B47	Fuel Pressure Sensor	—	Under the vehicle, at top of the fuel tank.		

Code	Name	Option	Location	Locator View	Connector End View
B52A	Heated Oxygen Sensor 1	—	In the engine compartment, right rear of the engine, mounted in the bank 1 exhaust, upstream of the catalytic converter.		
B52B	Heated Oxygen Sensor 2	—	Under the vehicle, right rear of the engine, mounted in the bank 1 exhaust, downstream of the catalytic converter.		
B55	Engine Compartment Cover Switch	—	Outside the vehicle, at the front center of the hood latch.		
B58L	Airbag Front End Discriminating Sensor - Left	—	Outside the vehicle, In the engine compartment, left front, at the bottom of the radiator core support.		
B58R	Airbag Front End Discriminating Sensor - Right	—	Outside the vehicle, In the engine compartment, right front, at the bottom of the radiator core support.		
B61P	Seat Belt Tension Sensor - Passenger	—	In the passenger compartment, at the base of the B-pillar, part of the passenger seat belt retractor pretensioner		
B63LF	Airbag Side Impact Sensor - Left Front Door	—	In the driver door, mounted to door structure, at the bottom, between the window motor and door latch.		
B63LRG	Airbag Side Impact Rear Sensor - Left	—	In the passenger compartment, left rear, mounted to lower C-pillar, behind trim.		
B63RF	Airbag Side Impact Sensor - Right Front Door	—	In the passenger door, mounted to door structure, at the bottom, between the window motor and door latch.		
B63RRG	Airbag Side Impact Rear Sensor - Right	—	In the passenger compartment, right rear, mounted to lower C-pillar, behind trim.		
B65	Manifold Absolute Pressure and Intake Air Temperature Sensor	—	Outside of the vehicle, In the engine compartment, left front of the engine mounted on the intake manifold.		
B68A	Knock Sensor 1	—	Outside of the vehicle, In the engine compartment, left side of engine, mounted to the front of the engine block, below Q17A Fuel Injector 1 and Q17B Fuel Injector 2		
B68B	Knock Sensor 2	—	In the engine compartment, left side of engine, mounted to the front of the block, below Q17C Fuel Injector 3and Q17D Fuel Injector 4		

Code	Name	Option	Location	Locator View	Connector End View
B75	Mass Airflow Sensor	—	In the right side of the engine compartment, attached to the upper side of the air cleaner assembly.		
B81B	Automatic Transmission Control Park Position Switch	—	In the passenger compartment, part of the automatic transmission shifter, at the base of the shift lever.	—	—
B87	Rearview Driver Information Camera	UV2 / UVB	Outside the vehicle, at the top middle of the tailgate, mounted in the tailgate handle.	• •	• •
B88D	Seat Belt Switch - Driver	—	In the passenger compartment, at the inboard side of the driver seat, part of the seat belt buckle.		
B88LR	Seat Belt Switch - Left Rear	—	In the passenger compartment, left side rear, next to left rear seat, part of the seat buckle	—	—
B88MR	Seat Belt Switch - Rear Middle	—	In the passenger compartment, center rear, next to center rear seat, part of the seat buckle	—	—
B88P	Seat Belt Switch - Passenger	—	In the passenger compartment, at the inboard side of the passenger seat, part of the seat belt buckle.		
B88RR	Seat Belt Switch - Right Rear	—	In the passenger compartment, right side rear, next to right rear seat, part of the seat buckle	—	—
B107	Accelerator Pedal Position Sensor	—	In the passenger compartment, front driver side, in the accelerator pedal assembly, mounted to bulkhead.		
B110	Battery Monitor Module	—	Outside of the vehicle, In the engine compartment, right side, near C1 Battery negative cable.	—	• •
B111	Turbocharger/ Supercharger Boost Pressure Sensor	—	Outside of the vehicle, In the engine compartment, left front, mounted to the top left side of the intercooler.		
B118	Windshield Washer Solvent Container Level Sensor	—	At Right front corner of vehicle, behind front fender, mounted to right side middle of windshield washer solvent container.	—	
B137B	Power Steering Shaft Torque/ Position Sensor	—	Under the vehicle, in the engine compartment, on the power steering rack.	—	
B139	Transfer Case Two/Four Wheel Drive Actuator Position Sensor	NP0 / NQH	Under the vehicle, mounted to the transfer case.		
B150	Fuel Tank Pressure Sensor	—	Under the vehicle, at the top of the fuel tank.		

Code	Name	Option	Location	Locator View	Connector End View
B153D	Front Seat Belt Buckle - Driver	—	In the passenger compartment, at the inboard side of the drive seat.	—	—
B153LR	Rear Seat Belt Buckle - Left	—	In the passenger compartment, left side rear, next to left rear seat.	—	
B153P	Front Seat Belt Buckle - Passenger	—	In the passenger compartment, at the inboard side of the passenger seat.	—	—
B153RM	Rear Center Seat Belt Buckle	—	In the passenger compartment, center rear, next to center rear seat.	—	
B153RR	Rear Seat Belt Buckle - Right	—	In the passenger compartment, right side rear, next to right rear seat.	—	
B160	Inside Air Moisture and Windshield Temperature Sensor	—	In the passenger compartment, at the top center of the windshield.	• •	
B172LF	Front Disc Brake Pad Wear Sensor - Left	—	Under the vehicle, at left front caliper.		
B172LR	Rear Disc Brake Pad Wear Sensor - Left	—	Under the vehicle, at left rear caliper.		
B174G	Front View Driver Information Camera - Grille	—	At the front of the vehicle, front center, near the grille.		• •
B174W	Front View Camera - Windshield	—	In the passenger compartment, at the top middle of the windshield.	• •	
B203	Radiator Coolant Temperature Sensor	—	In the engine compartment, right front, attached to the right side of the radiator.		
B218L	Side Obstacle Detection Control Module - Left	—	Outside of the vehicle, left rear corner, mounted to the inside of the rear bumper.		
B218R	Side Obstacle Detection Control Module - Right	—	Outside of the vehicle, right rear corner, mounted to the inside of the rear bumper.		
B225L	Side View Driver Information Camera - Left	—	Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver.	—	—
B225R	Side View Driver Information Camera - Right	—	Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger.	—	—
B306E	Parking Assist Alarm Sensor - Rear Left Outer	—	Outside of the vehicle, at the rear left side, mounted in the rear bumper.		
B306F	Parking Assist Alarm Sensor - Rear Left Middle	—	Outside of the vehicle, at the rear left of center, mounted in the rear bumper.		
B306G	Parking Assist Alarm Sensor - Rear Right Middle	—	Outside of the vehicle, at the rear right of middle, mounted in the rear bumper.		

Code	Name	Option	Location	Locator View	Connector End View
B306H	Parking Assist Alarm Sensor - Rear Right Outer	—	Outside of the vehicle, at the rear right side, in the rear bumper.		
B310	Fuel Pressure and Temperature Sensor	—	Outside of the vehicle, In the engine compartment, left front side of the engine, on the fuel rail.		
B321	Crankcase Pressure Sensor	—	Outside of the vehicle, In the engine compartment, rear center, mounted to the top side of the valve cover.		
B338A	Intake Camshaft Profile Sleeve Position Sensor 1	—	Outside of the vehicle, In the engine compartment, center, mounted to camshaft carrier, left of M129A Intake Camshaft Profile Actuator 1.		
B338B	Intake Camshaft Profile Sleeve Position Sensor 2	—	Outside of the vehicle, In the engine compartment, center, mounted to camshaft carrier, left of M129D Intake Camshaft Profile Actuator 4.		
B339A	Exhaust Camshaft Profile Sleeve Position Sensor 1	—	Outside of the vehicle, In the engine compartment, center, mounted to the right side of the camshaft carrier.		
B339B	Exhaust Camshaft Profile Sleeve Position Sensor 2	—	Outside of the vehicle, In the engine compartment, center, mounted to the right side of the camshaft carrier.		
B355	Communication Interface Module Microphone	—	Outside of the vehicle, In the passenger compartment, on the front center of the headliner, in the right side of the overhead console.	• •	
B384	Rearview Underbody Camera	UXA	Under the vehicle, below front powertrain, at rear opening in skid plate.		
B385	Front View Underbody Camera	UXA	Under the vehicle, below front powertrain, at front opening in skid plate.		
C1	Battery	—	Outside of the vehicle, In the engine compartment, right rear.	—	—
E2LFW	Front Side Marker Lamp - Left Wheel Opening Molding	—	Outside of the vehicle, Mounted within left front fender, mounted in center.		
E2LRW	Rear Side Marker Lamp - Left Wheel Opening Molding	—	Outside of the vehicle, Mounted within right front fender, mounted in center.		
E2RFW	Front Side Marker Lamp - Right Wheel Opening Molding	—	Outside of the vehicle, Mounted within rear fender, left rear center.		
E2RRW	Rear Side Marker Lamp - Right Wheel Opening Molding	—	Outside of the vehicle, Mounted within rear fender, right rear center.		

Code	Name	Option	Location	Locator View	Connector End View
E5A	Backup Bulb - Left	—	At the rear of vehicle, left rear corner, within E42L Rear Body Structure Stop Lamp - Left.		—
E5B	Backup Bulb - Right	—	At the rear of vehicle, right rear corner, within E42R Rear Body Structure Stop Lamp - Right.		—
E6	High Mount Stop Lamp	—	Outside the vehicle, at the top center of the rear window bridge.		
E7L	Rear License Plate Lamp - Left	—	Outside the vehicle, mounted in the middle of the rear bumper.		
E7R	Rear License Plate Lamp - Right	—	Outside the vehicle, mounted in the middle of the rear bumper.		
E13LA	Front Headlamp - Left	—	Outside the vehicle, at the left front corner.		
E13RA	Front Headlamp - Right	—	Outside the vehicle, at the right front corner.		
E14A	Front Seat Back Heater - Driver	—	In the passenger compartment, in the driver seat back.		
E14B	Front Seat Cushion Heater - Driver	—	In the passenger compartment, in the driver seat cushion.		
E14C	Front Seat Back Heater - Passenger	KA1	In the passenger compartment, in the passenger seat back.		
E14D	Front Seat Cushion Heater - Passenger	KA1	In the passenger compartment, in the passenger seat cushion.		
E15	Steering Wheel Heater	—	In the passenger compartment, left front, part of the steering wheel.	—	—
E17D	Outside Rearview Mirror Glass - Driver	—	Outside the vehicle, at the front of the driver door, part of A9A Outside Rearview Mirror - Driver.	—	—
E17P	Outside Rearview Mirror Glass - Passenger	—	Outside the vehicle, at the front of the passenger door, part of A9B Outside Rearview Mirror - Passenger.	—	—
E18	Rear Window Defogger Grid	—	At the rear of the passenger compartment, part of the rear window glass.		• •
E29LF	Front Fog Lamp - Left	—	Outside the vehicle, at the left front corner, in the front bumper, below E13LA Front Headlamp - Left.		
E29RF	Front Fog Lamp - Right	—	Outside the vehicle, at the right front corner, in the front bumper, below E13RA Front Headlamp - Right.		
E31L	Sunshade Mirror Lamp - Left	—	In the passenger compartment, at the left front of the headliner, part of A3L Sunshade - Left.	• •	—

Code	Name	Option	Location	Locator View	Connector End View
E31R	Sunshade Mirror Lamp - Right	—	In the passenger compartment, at the right front of the headliner, part of A3R Sunshade - Right.	• •	—
E33L	Cargo Lamp - Left	—	Outside the vehicle, at the top center of the rear window bridge, within E6A High Mount Stop and Cargo Lamp.	—	
E33R	Cargo Lamp - Right	—	Outside the vehicle, at the top center of the rear window bridge, within E6A High Mount Stop and Cargo Lamp.	—	
E42L	Rear Body Structure Stop Lamp - Left	—	Outside the vehicle, at the left rear corner of the cargo box.		
E42R	Rear Body Structure Stop Lamp - Right	—	Outside the vehicle, at the right rear corner of the cargo box.		
E97	Rear Seat Position Center Courtesy Lamp	—	In the passenger compartment, rear center, mounted to headliner.	• •	• •
F101	Instrument Panel Airbag	—	In the passenger compartment, behind the instrument panel upper glove box.		
F105L	Front and Rear Row Roof Rail Airbag - Left	—	In the passenger compartment, along the left side of the headliner.		
F105R	Front and Rear Row Roof Rail Airbag - Right	—	In the passenger compartment, along the right side of the headliner.		
F106D	Front Seat Outboard Seat Back Airbag - Driver	—	In the passenger compartment, in the outboard side of the driver seat back.		
F106P	Front Seat Outboard Seat Back Airbag - Passenger	—	In the passenger compartment, in the outboard side of the passenger seat back.		
F107	Steering Wheel Airbag	—	In the passenger compartment, mounted to the middle of the steering wheel.		
F112D	Front Seat Belt Retractor - Driver	—	In the passenger compartment, at the base of the driver side B-pillar.		
F112P	Front Seat Belt Retractor - Passenger	—	In the passenger compartment, at the base of the passenger side B-pillar.		
F113D	Front Seat Belt Anchor Plate Tensioner - Driver	—	In the passenger compartment, mounted to the outboard driver seat track.		
F113P	Front Seat Belt Anchor Plate Tensioner - Passenger	—	In the passenger compartment, mounted to the outboard passenger seat track.		

Code	Name	Option	Location	Locator View	Connector End View
G1	Air Conditioning Compressor	—	In the engine compartment, left front, mounted to the left lower side of the engine.		—
G5	Automatic Transmission Auxiliary Fluid Pump	—	Under the vehicle, within T12 Automatic Transmission.	—	
G10L	Cooling Fan Motor - Left	—	In the engine compartment, in the radiator shroud, left side.		
G10LW	Cooling Fan Motor - Lower	—	In the engine compartment, in the radiator shroud, beneath the left and right cooling fan motors.		
G10R	Cooling Fan Motor - Right	—	In the engine compartment, in the radiator shroud, right side.		
G12	Fuel Pump	—	Under the vehicle, within the fuel tank, part of A7 Fuel Tank Fuel Pump Module.	—	—
G13	Generator	—	In the engine compartment, left front, mounted to the left upper side of the engine.		• •
G18	Fuel Pump - High Pressure	—	In the engine compartment, rear center, mounted on top of the rear of the camshaft carrier.		
G24	Windshield Washer Pump	—	At Right front corner of vehicle, behind front fender, mounted to right side middle of windshield washer solvent container.	—	
G58	Evaporative Emission Canister Purge Pump	—	In the engine compartment, center, mounted above the intake manifold, to the left of the camshaft carrier.		
G59	Engine Coolant Pump	—	In the engine compartment, right front, beneath turbocharger.		
K9	Body Control Module	—	In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column.	• •	• • • • • • • •
K20	Engine Control Module	—	In the engine compartment, Right side, Behind the X50B Battery Distribution Engine Compartment Fuse Block.	—	• • •
K29FV	Front Seat Heater Vent Control Module	KA1	In the passenger compartment, right front, under the passenger seat cushion.		• •

Code	Name	Option	Location	Locator View	Connector End View
K32	Heated Steering Wheel Module	—	In the passenger compartment, in the steering wheel, behind the driver air bag.		• •
K36	Restraints Control Module	—	In the passenger compartment, bolted to the floor between the front seats or under console.	• •	• •
K38	Chassis Control Module	—	Under the vehicle, mounted to the bracket above the spare tire.		
K40D	Driver Seat Adjuster Memory Module	A45	In the passenger compartment, left front, mounted to the driver seat, beneath the front of the driver seat cushion.		• • •
K43	Power Steering Control Module	—	In the engine compartment, bottom rear, mounted to steering gear.	—	• • •
K56	Serial Data Gateway Module	—	In the passenger compartment, behind the instrument panel, center upper.		• • •
K61	Sunroof Control Module	—	In the passenger compartment, front center, above headliner, rear of A103 Roof Console, forward of sunroof.		
K67	Trailer Brake Control Module	—	Under the vehicle, mounted to the bracket above the spare tire.		
K68	Trailer Lamp Control Module	—	Under the vehicle, mounted to the bracket above the spare tire.		
K69	Transfer Case Control Module	—	Outside the vehicle, left front, under the air cleaner assembly.		
K71	Transmission Control Module	—	In the engine compartment, Right side, Behind the X50B Battery Distribution Engine Compartment Fuse Block.	• •	
K73	Telematic Control Module	—	In the passenger compartment, Rear, bolted to the Cab under the back glass.		• • • •
K77	Remote Function Actuator Module	—	In the passenger compartment, center, below headliner.	• •	
K85P	Restraints Occupant Classification System Module - Passenger	—	In the passenger compartment, right front, mounted to the passenger seat, beneath the front of the right front seat cushion.		
K111	Fuel Pump Power Control Module	—	Under the vehicle, mounted to the bracket above the spare tire.		

Code	Name	Option	Location	Locator View	Connector End View
K157	Video Processing Module	(UV2 - UVB / UXA)	In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column.	• •	• • • • • • • • •
K160	Brake System Control Module	—	Outside the vehicle, in the engine compartment, left rear corner, near brake master cylinder.		
K174L	Rear Body Structure Stop Lamp LED Driver Module - Left	—	Outside the vehicle, at the left rear corner of the cargo box, mounted to the E42L Rear Body Structure Stop Lamp - Left		—
K174R	Rear Body Structure Stop Lamp LED Driver Module - Right	—	Outside the vehicle, at the right rear corner of the cargo box, mounted to the E42R Rear Body Structure Stop Lamp - Right		—
K182	Parking Assist Control Module	—	In the passenger compartment, right side, under and to the left of the F101 Instrument Panel Airbag		• •
K219	Lighting Control Module	—	In the passenger compartment, left side, mounted in bracket to the left side kick panel.		• • • • •
K221L	Headlamp LED Driver Module - Left	—	At the left front of the vehicle, mounted to the rear of E13LA Front Headlamp - Left	—	—
K221R	Headlamp LED Driver Module - Right	—	At the right front of the vehicle, mounted to the rear of E13RA Front Headlamp - Right	—	—
M4P	Programmable Air Inlet Valve Actuator	—	In the passenger compartment, within the instrument panel, right of center, behind front floor console extension panel, mounted to the left side of the M8 Blower Motor		
M6PL	Programmable Temperature Valve Actuator - Left	—	In the passenger compartment, within the instrument panel, right of center, behind front floor console extension panel, mounted to the right side of the HVAC assembly		

Code	Name	Option	Location	Locator View	Connector End View
M6PR	Programmable Temperature Valve Actuator - Right	—	In the passenger compartment, within the instrument panel, right of center, behind front floor console extension panel, mounted to the right side of the HVAC assembly		
M7	Automatic Transmission Shift Lock Control Solenoid	—	In the passenger compartment, center near front, within the floor console.	—	—
M8	Blower Motor	—	In the passenger compartment, under the right side of the instrument panel, above the hush panel		
M26	Front Drive Axle Actuator	NP0/NQH	Under the vehicle, mounted to the front axle	—	
M37P	Programmable Mode Valve Actuator	—	In the passenger compartment, within the instrument panel, right of center, behind front floor console extension panel, mounted to the right side of the HVAC assembly		
M38	Power Steering Assist Motor	—	Under the vehicle, part of the steering gear assembly	—	—
M50D	Front Seat Tilt Adjuster Actuator - Driver	—	In the driver seat, mounted to front outboard corner of seat track.		• •
M51D	Front Seat Adjuster Actuator - Driver	—	In the driver seat, mounted to seat track near center.		
M51P	Front Seat Adjuster Actuator - Passenger	—	In the passenger seat, mounted to seat track near center.		
M53D	Front Seat Back Lumbar Motor - Driver	—	In the passenger compartment, in the center of the driver seat back.		
M53P	Front Seat Back Lumbar Motor - Passenger	—	In the passenger compartment, right front, mounted inside of the passenger seat back.		
M55D	Front Seat Vertical Adjuster Actuator - Driver	—	In the passenger compartment, under the driver seat.		
M55P	Front Seat Vertical Adjuster Actuator - Passenger	—	In the passenger compartment, under the passenger seat.		
M56D	Front Seat Recliner Actuator - Driver	—	In the passenger compartment, in the driver seat back.		
M56P	Front Seat Recliner Actuator - Passenger	—	In the passenger compartment, in the passenger seat back.		
M64	Starter	—	In the engine compartment, left rear, mounted to rear of engine block.		• •
M73A	Front Seat Back Ventilation Blower - Driver	—	In the passenger compartment, in the driver seat back.		

Code	Name	Option	Location	Locator View	Connector End View
M73B	Front Seat Back Ventilation Blower - Passenger	KU9	In the passenger compartment, in the passenger seat back.		
M73D	Front Seat Cushion Ventilation Blower - Driver	—	In the driver seat, mounted to seat track near center.		
M73P	Front Seat Cushion Ventilation Blower - Passenger	KU9	In the passenger seat, mounted to seat track near center.		
M74D	Front Side Door Window Regulator Motor - Driver	—	In the passenger compartment, in the driver door.		
M74LR	Rear Side Door Window Regulator Motor - Left	—	In the passenger compartment, in the left rear door.		
M74P	Front Side Door Window Regulator Motor - Passenger	—	In the passenger compartment, in the passenger door.		
M74RR	Rear Side Door Window Regulator Motor - Right	—	In the passenger compartment, in the right rear door.		
M75	Windshield Wiper Motor	—	Outside the vehicle, at the left rear of the engine compartment, below the left lower corner of the windshield.		
M77D	Outside Rearview Mirror Actuator - Driver	—	Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver.	—	—
M77P	Outside Rearview Mirror Actuator - Passenger	—	Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger.	—	—
M96	Active Grille Air Shutter Actuator	—	At the front of the vehicle, center, attached to the inside of the front grille.	—	
M96B	Active Grille Air Shutter Actuator 2	—	At the front of the vehicle, center, attached to the inside of the front grille.		
M104L	Parking Brake Actuator - Left	—	Under the vehicle, left rear, attached to the left rear brake caliper.		
M104R	Parking Brake Actuator - Right	—	Under the vehicle, right rear, attached to the right rear brake caliper.		
M128	Turbocharger Wastegate Actuator	—	In the engine compartment, right side of engine, mounted to the front of the turbocharger compressor.		
M129A	Intake Camshaft Profile Actuator 1	—	In the engine compartment, center, left of T8A Ignition Coil 1.		
M129B	Intake Camshaft Profile Actuator 2	—	In the engine compartment, center, left of T8B Ignition Coil 2.		

Code	Name	Option	Location	Locator View	Connector End View
M129C	Intake Camshaft Profile Actuator 3	—	In the engine compartment, center, left of T8C Ignition Coil 3.		
M129D	Intake Camshaft Profile Actuator 4	—	In the engine compartment, center, left of T8D Ignition Coil 4.		
M130B	Exhaust Camshaft Profile Actuator 2	—	In the engine compartment, center, right of T8B Ignition Coil 2.		
M130C	Exhaust Camshaft Profile Actuator 3	—	In the engine compartment, center, right of T8C Ignition Coil 3.		
P2	Automatic Transmission Control Indicator	—	In the passenger compartment, center, near front, at top of floor console, near the shift lever.		
P13	Horn	—	At the front of the vehicle, right side, mounted to the right front of the radiator core support.		
P14	Instrument Panel Airbag Arming Status Display	—	In the passenger compartment, front center, in the overhead console.	• •	
P16	Instrument Panel Cluster Control Module	—	In the instrument panel, driver side, above the steering column.		• • •
P19AG	Radio Front Side Door Speaker - Left	UQ3	In the left front door, lower front corner of door, behind door trim panel.		
P19AH	Radio Front Side Door Speaker - Right	UQ3	In the right front door, lower front corner of door, behind door trim panel.		
P19AL	Radio Rear Side Door Speaker - Left	UQA / UQ3	In the left rear door, lower front corner of door, behind door trim panel.		• •
P19AM	Radio Rear Side Door Speaker - Right	UQA / UQ3	In the left rear door, lower front corner of door, behind door trim panel.		• •
P19B	Radio Front Center Speaker	UQA	In the instrument panel, at center top, behind grille.		
P19J	Radio Front Speaker - Instrument Panel Left	UQ3 / UQA	In the instrument panel, left front, mounted to instrument panel behind grille.		• •
P19W	Radio Front Speaker - Instrument Panel Right	UQ3 / UQA	In the instrument panel, right front, mounted instrument panel behind grille.		• •
P29	Head-Up Display	UV6	In the passenger compartment, at the left side of the instrument panel, near the windshield.	• •	• •
P34D	Side Object Detection Indicator - Driver	—	Outside of the vehicle, left side, part of E17D Outside Rearview Mirror Glass - Driver, within A9A Outside Rearview Mirror - Driver	—	—

Code	Name	Option	Location	Locator View	Connector End View
P34P	Side Object Detection Indicator - Passenger	—	Outside of the vehicle, left side, part of E17P Outside Rearview Mirror Glass - Passenger, within A9B Outside Rearview Mirror - Passenger	—	—
P43	Forward Collision Alert Display	—	In the passenger compartment, in the top of the instrument panel, near the windshield, in front of the driver.		
P45L	Front Seat Lane Departure Warning Actuator - Left	—	In the passenger compartment, in the left side of the driver seat cushion.		
P45R	Front Seat Lane Departure Warning Actuator - Right	—	In the passenger compartment, in the right side of the driver seat cushion.		
P50	Regulatory Emergency Call Backup Speaker	—	In the instrument panel, at center top, behind grille.		
Q2	Air Conditioning Clutch	—	In the engine compartment, left front, part of G1 A/C Compressor		
Q6E	Camshaft Position Actuator Solenoid Valve - Exhaust	—	In the engine compartment, front center, in front of exhaust camshaft		
Q6F	Camshaft Position Actuator Solenoid Valve - Intake	—	In the engine compartment, front center, in front of intake camshaft		
Q9F	Differential Locking Actuator - Front	G93	In the engine compartment, mounted to the front differential.	—	
Q9R	Differential Locking Actuator - Rear	—	Under the vehicle, rear center, mounted to the top left side of the rear differential carrier.		
Q12	Evaporative Emission Canister Purge Solenoid Valve	—	Outside of the vehicle, right front side of the engine compartment.		
Q13	Evaporative Emission Canister Vent Solenoid Valve	—	On the underbody, at the top left side, forward of the fuel tank.		
Q17A	Fuel Injector 1	—	In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 1		
Q17B	Fuel Injector 2	—	In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 2		
Q17C	Fuel Injector 3	—	In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 3		

Code	Name	Option	Location	Locator View	Connector End View
Q17D	Fuel Injector 4	—	In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 4		
Q38	Throttle Body	—	In the engine compartment, at the Left front of the engine, mounted to the intake manifold inlet		
Q40	Turbocharger Bypass Valve Solenoid	—	In the engine compartment, right side, mounted to the turbocharger compressor, beneath turbocharger compressor inlet		
Q44	Engine Oil Pressure Control Solenoid Valve	—	In the engine compartment, rear center, within lower oil pan, left of oil filter	—	
Q46	Air Conditioning Compressor Solenoid Valve	—	In the engine compartment, left front, part of G1 A/C Compressor		
Q74	Engine Coolant Bypass Valve	—	In the engine compartment, left rear, attached to the bottom rear of Q97 Engine Coolant Flow Control Valve		
Q77A	Transmission Control Solenoid Valve 1	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77B	Transmission Control Solenoid Valve 2	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77C	Transmission Control Solenoid Valve 3	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77D	Transmission Control Solenoid Valve 4	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77E	Transmission Control Solenoid Valve 5	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77F	Transmission Control Solenoid Valve 6	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77G	Transmission Control Solenoid Valve 7	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77H	Transmission Control Solenoid Valve 8	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q77J	Transmission Control Solenoid Valve 9	—	Under the vehicle, inside the T12 Automatic Transmission	—	
Q97	Engine Coolant Flow Control Valve	—	In the engine compartment, attached to the Left Side of the Engine	—	—
Q97B	Engine Coolant Flow Control Valve - Block	—	In the engine compartment, left, attached to the front of Q97 Engine Coolant Flow Control Valve		

Code	Name	Option	Location	Locator View	Connector End View
R6A	Terminating Resistor - High Speed Bus	—	In the passenger compartment, under the driver seat.	—	
S2	Automatic Transmission Manual Shift Shaft Position Switch	—	Underneath the vehicle, within T12 Automatic Transmission.	—	
S3	Automatic Transmission Control	—	In the passenger compartment, center near front, within the floor console.	• •	
S13D	Door Lock Switch - Driver	—	In the passenger compartment, in the driver door handle trim panel.		
S13P	Door Lock Switch - Passenger	—	In the passenger compartment, in the passenger door handle trim panel.		
S26	Hazard Warning Switch	—	In the passenger compartment, mounted to the instrument panel, beneath A26 HVAC Controls, right switch bank.		
S33	Steering Wheel Horn Contact	—	In the passenger compartment, in the center of the steering wheel, behind the driver side air bag.		
S36	Dimmer Switch	—	In the passenger compartment, left front, mounted to the left side of the instrument panel bezel, left of steering column.		
S38	On/Off Vehicle Switch	—	In the passenger compartment, right of the steering column, in the instrument panel.		
S47D	Front Seat Adjuster Memory Switch - Driver	A45	In the passenger compartment, on the driver door panel above the driver door switch assembly		
S51	Communication Center Call Switch	—	In the passenger compartment, front center, in the overhead console.	• •	
S64D	Front Seat Adjuster Switch - Driver	A2X / A45	In the passenger compartment, mounted to the outboard side of the driver seat cushion.		• •
S64P	Front Seat Adjuster Switch - Passenger	—	In the passenger compartment, mounted to the outboard side of the passenger seat cushion.		
S65D	Front Seat Lumbar Switch - Driver	AL9	In the passenger compartment, mounted to the outboard side of the driver seat cushion.		
S65P	Front Seat Lumbar Switch - Passenger	—	In the passenger compartment, mounted to the outboard side of the passenger seat cushion.		

Code	Name	Option	Location	Locator View	Connector End View
S70E	Radio Favorites Switch - Steering Wheel	—	In the passenger compartment, on the left rear side of the steering wheel.		
S70F	Radio Volume Switch - Steering Wheel	—	In the passenger compartment, on the right rear side of the steering wheel.		
S70L	Cruise Control Switch	—	In the passenger compartment, on the left side of the steering wheel.		
S70R	Radio Control Switch - Steering Wheel	—	In the passenger compartment, on the right side of the steering wheel.		
S72	Sunroof Switch	CAC	In the passenger compartment, front center, in the overhead console.		
S76	Trailer Brake Control Switch	—	In the passenger compartment, mounted to the left side of the instrument panel bezel, under the S36 Dimmer Switch.		
S78	Turn Signal Switch	—	In the passenger compartment, on the left side of the steering column.	• •	
S79D	Front Side Door Window Control Switch - Driver	—	In the passenger compartment, on the driver door trim panel, center of the door.		• •
S79LR	Rear Side Door Window Switch - Left	—	In the passenger compartment, at the center of the left rear door, on the door trim panel.		
S79P	Front Side Door Window Switch - Passenger	—	In the passenger compartment, on the passenger door trim panel, center of the door.		• •
S79RR	Rear Side Door Window Switch - Right	—	In the passenger compartment, on the right rear door trim panel, center of the door.		
S88	Sunroof Tilt Position Switch	CAC	In the passenger compartment, front center, in the overhead console.		
S91	Parking Brake Control Switch	—	In the passenger compartment, top center of the center console, left of the shifter.		
S126	Ride Control Switch	NP0 / NQH	In the passenger compartment, top of the center console, left of the shifter.		
T1	DC/AC Converter Control Module	KC9 / KCA	In the passenger compartment, Rear, bolted to the Cab under the back glass to the right of the K73 Telematic Control Module.		• • •

Code	Name	Option	Location	Locator View	Connector End View
T3	Audio Amplifier	—	In the passenger compartment, Rear, bolted to the Cab under the back glass to the right of the T1 DC/AC Converter Control Module.		• • •
T4P	High Frequency Antenna	U2K/(- U2Q - U2K)/U2Q	Outside the vehicle, at the rear of the roof.	• •	• • • • •
T4TA	Auxiliary Wireless Communication Interface Antenna	—	In the passenger compartment, behind the instrument panel, right of the K56 Serial Data Gateway Module.		
T8A	Ignition Coil 1	—	In the engine compartment, at the top of the engine, above cylinder 1		
T8B	Ignition Coil 2	—	In the engine compartment, at the top of the engine, above cylinder 2		
T8C	Ignition Coil 3	—	In the engine compartment, at the top of the engine, above cylinder 3		
T8D	Ignition Coil 4	—	In the engine compartment, at the top of the engine, above cylinder 4		
T10KA	Low Frequency Console Number 2 Antenna	—	In the passenger compartment, middle of the center console, under cup holder.		
T10M	Low Frequency Front Side Door Outside Handle Antenna - Left	—	Outside of the vehicle, left side, within A24D Front Side Door Outside Handle - Left.	—	
T10N	Low Frequency Front Side Door Outside Handle Antenna - Right	—	Outside of the vehicle, right side, within A24P Front Side Door Outside Handle - Right.	—	
T10UA	Low Frequency Console Antenna	—	In the passenger compartment, back of the center console, under vents.		
T12	Automatic Transmission	—	Under the vehicle, mounted to the rear of the engine	—	—
T19	Multifunction Power Supply Converter	—	In the passenger compartment, right rear, under right rear seat.		
T22	Wireless Accessory Charging Module	K4C	In the passenger compartment, front of the center console, forward of the shifter assembly.		
W24	Blunt Cut - Trailer Brakes Provision	—	In the passenger compartment, under left side of the instrument panel, behind kick panel.		—

Code	Name	Option	Location	Locator View	Connector End View
W25	Blunt Cut - Configurable/ Accessory Relay	—	In the passenger compartment, under right side of the instrument panel, behind kick panel.		—
W26	Blunt Cut - Cargo Lamps Provision	—	Accessory Package Component, near inline X382.		—
X50A	Engine Wiring Harness Junction Block	—	In the engine compartment, right front, in front of C1 Battery.		*Electrical Center Identification Views 7-26*
X50B	Battery Distribution Engine Compartment Fuse Block	—	In the engine compartment, right rear, left of the C1 Battery.	• •	*Electrical Center Identification Views 7-26*
X51A	Instrument Panel Wiring Harness Junction Block	—	In the passenger compartment, right side of the instrument panel, behind side trim panel.	• •	*Electrical Center Identification Views 7-26*
X80L	Front Floor Console Accessory Power Rear Receptacle	KCA	In the passenger compartment, center, mounted to the rear of the floor console.		
X81ACA	Front Floor Console Accessory Power Rear Receptacle - 110V AC	KI6	In the passenger compartment, center, mounted to the rear of the floor console.		
X81AP	Pickup Box Accessory Power Receptacle - 110V AC	—	Outside of the vehicle, right rear corner of the truck bed.		
X81BCA	Front Floor Console Accessory Power Rear Receptacle - 220V AC	—	In the passenger compartment, center, mounted to the rear of the floor console.		
X81BP	Pickup Box Accessory Power Receptacle - 220V AC	—	Outside of the vehicle, right rear corner of the truck bed.	—	
X84	Data Link Connector	—	In the passenger compartment, at the bottom of the driver side of the instrument panel.		
X85	Steering Wheel Airbag Coil	—	In the passenger compartment, behind the steering wheel.	• •	• •
X88B	Tow Vehicle Electrical Receptacle	—	At the rear of the vehicle, forward of the rear bumper fascia trailer hitch cover, to the left of the hitch.		
X92C	Single Charge Only 2nd Row Receptacle - Floor Console Rear	—	In the passenger compartment, center, mounted to the rear of the floor console.		
X92G	USB 2 Port Receptacle	—	In the passenger compartment, center, mounted to the front of the floor console.		• •
X100	Chassis Wiring Harness to Body Wiring Harness	—	In the engine compartment, top left side, near shock tower.	• •	

Code	Name	Option	Location	Locator View	Connector End View
X101	Body Wiring Harness to Chassis Wiring Harness	—	In the engine compartment, top left side, to the right and before X100 connector.	• •	
X107	Chassis Wiring Harness to Power Steering Wiring Harness	—	In the engine compartment, near bottom left of engine near steering gear.		
X144	Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness	—	Under the vehicle, in right front wheel well, near frame rail.		
X150	Body Wiring Harness to Forward Lamp Wiring Harness	—	At front left of vehicle, attached to body structure rear of E13LA Front Headlamp - Left.	• •	
X156	Body Wiring Harness to Forward Lamp Wiring Harness	—	At front right of vehicle, rear of E13RA Front Headlamp - Right.	• •	
X160	Engine Wiring Harness to Fuel Injector Wiring Harness	—	In the engine compartment, left side of engine below intake manifold.		
X175	Engine Wiring Harness to Automatic Transmission Wiring Harness	—	Under the vehicle, at the rear of the T12 Automatic Transmission.		
X176	Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness	—	Under the vehicle, inside the T12 Automatic Transmission.	—	
X177	Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness	—	Under the vehicle, inside the T12 Automatic Transmission.	—	
X195	Forward Lamp Wiring Harness to Front View Camera Switch Wiring Harness	—	At front right of vehicle, under the E13RA Front Headlamp - Right.	• •	
X198	Power Steering Wiring Harness to Battery Negative Cable Extension Cable	—	Under the vehicle, near power steering gear.	—	
X199	Chassis Wiring Harness to Body Wiring Harness	—	In the engine compartment, top left side, below the X101 connector.	• •	
X201	Engine Wiring Harness to Body Wiring Harness	—	Under the vehicle, right, behind X50B Battery Distribution Engine Compartment Fuse Block.	• •	

Code	Name	Option	Location	Locator View	Connector End View
X204	Engine Wiring Harness to Chassis Wiring Harness	—	In the engine compartment, bottom right, under the turbocharger.	• •	
X250A	Radiator Extension Harness to Forward Lamp Wiring Harness	—	At front right of vehicle, lower right side of radiator.		
X250J	Windshield Washer Pump Extension Wiring Harness to Forward Lamp Wiring Harness	—	At front left of vehicle, to the right of connector X156, rear of E13LA Front Headlamp - Right		
X250R	Body Wiring Harness to Forward Lamp Wiring Harness	—	At front right of vehicle, to the right of the radiator.	• •	
X260	Front Object Alarm Sensor Wiring Harness to Forward Lamp Wiring Harness	—	At front right of vehicle, under the E13RA Front Headlamp - Right.	• •	
X300	Body Wiring Harness to Instrument Panel Wiring Harness	—	In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar.	• •	
X301	Body Wiring Harness to Instrument Panel Wiring Harness	—	In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar below connector J300.	• •	
X302A	Front Seat Wiring Harness - Driver to Body Wiring Harness	—	In the passenger compartment, driver side, on floor below driver seat next to connector X302B.	• •	
X302B	Front Seat Wiring Harness - Driver to Body Wiring Harness	—	In the passenger compartment, driver side, on floor below driver seat Next to connector X302A.	• •	
X303	Body Wiring Harness to Front Side Door Door Wiring Harness - Driver	—	In the driver door jamb, front, mounted to the body.	• • •	
X304	Instrument Panel Wiring Harness to Front Floor Console Wiring Harness Extension Harness	—	In the passenger compartment, center, beneath the front of the floor console.		
X305	Instrument Panel Wiring Harness to Front Floor Console Wiring Harness	—	In the passenger compartment, center, beneath the middle of the floor console.		
X315	Instrument Panel Wiring Harness to Air Conditioning Wiring Harness	—	In the passenger compartment, right front, within instrument panel, right side near M8 Blower Motor.		

Code	Name	Option	Location	Locator View	Connector End View
X367	Body Wiring Harness to Instrument Panel Wiring Harness	—	In the passenger compartment, center, beneath the cup holder of the floor console.	• •	
X371	Rearview Camera Wiring Harness Jumper to Rearview Camera Wiring Harness	—	Under the vehicle, left, before the cross member next to connector X372.		
X372	Front View Underbody Camera Jumper Wiring Harness to Rearview Camera Wiring Harness	UXA	Under the vehicle, left, before the cross member next to connector X371.		
X375	Roof Wiring Harness to Sunroof Wiring Harness	—	In the passenger compartment, above the headliner.	—	
X380	Instrument Panel Wiring Harness to Body Wiring Harness	UV2/UXA-UVB	In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar above connector J300.	• •	
X382	Chassis Wiring Harness to Chassis Wiring Harness	S0Y	At the rear of the vehicle, left corner, underneath, to bed.		
X383	Rearview Camera Wiring Harness Jumper to Body Wiring Harness	—	Under the vehicle, let side, at frame rail just under bulk head.		
X384	Rearview Camera Wiring Harness Jumper to Body Wiring Harness	UXA	Under the vehicle, let side, at frame rail just under bulk head.		
X393	Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver	—	In the drivers door, behind the drivers door panel.	• • •	
X399	Instrument Panel Wiring Harness to Body Wiring Harness	—	In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar above connector J300.	• •	
X400	Instrument Panel Wiring Harness to Body Wiring Harness	—	In the passenger compartment, right front, behind the right front trim panel beneath the A-pillar.	• •	
X401	Roof Wiring Harness to Body Wiring Harness	—	In the passenger compartment, top left instrument panel, at the A-pillar.	• • •	
X402A	Front Seat Wiring Harness - Passenger to Body Wiring Harness	—	In the passenger compartment, center, under center console toward the rear.	• •	

Code	Name	Option	Location	Locator View	Connector End View
X402B	Front Seat Wiring Harness - Passenger to Body Wiring Harness	—	In the passenger compartment, center, under center console toward the rear.	• •	
X402C	Roof Wiring Harness to Body Wiring Harness	—	In the passenger compartment, top right instrument panel, at the A-pillar.	• • •	
X402D	Inside Air Moisture and Windshield Temperature Sensor Jumper to Roof Wiring Harness	CJ2	In the passenger compartment, at the top center of the windshield.	• •	
X404	Body Wiring Harness to Front Side Door Door Wiring Harness - Passenger	—	In the passenger compartment, right front, behind the right front trim panel beneath the A-pillar.	• • •	
X494	Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Right	—	In the passenger door, behind the passenger door panel.	• • •	
X499A	Body Wiring Harness to Instrument Panel Wiring Harness	—	Approximately 9.6 cm (3.77in) from the engine compartment, right side, attached to the inboard side of the right body structure, forward of X50A Engine Wiring Harness Junction Block (G102E) - Forward Lamp Wiring Harness	—	
X499B	Body Wiring Harness to Instrument Panel Wiring Harness	—	In the passenger compartment, right front, behind the right front trim panel beneath the A-pillar.	• •	
X499C	Body Wiring Harness to Instrument Panel Wiring Harness	U2K	In the passenger compartment, right front, behind the right front trim panel beneath the A-pillar.	• •	
X500	Roof Wiring Harness to Body Wiring Harness	—	In the passenger compartment , rear of cab roof, at center high mounted stop lamp.	• • •	
X503	Rear Side Door Door Wiring Harness - Left to Body Wiring Harness	—	In the passenger compartment, behind the left B-pillar, near the middle.	• •	
X604	Rear Side Door Door Wiring Harness - Right to Body Wiring Harness	—	In the passenger compartment, behind the right B-pillar, near the middle.	• •	
X700	Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness	—	At the rear of the vehicle, left corner, underneath, on inboard side of frame rail.	• •	

Code	Name	Option	Location	Locator View	Connector End View
X708	Chassis Rear Wiring Harness to Chassis Wiring Harness	—	At the rear of the vehicle, left corner, underneath, on outside of frame rail behind bed mount attached to frame.	—	
X777	Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness	-G94	Under the vehicle, left, rear of the fuel tank.		
X788	Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness	—	Under the vehicle, left, rear of the fuel tank.		
X808	Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness	—	At the rear of the vehicle, right corner, underneath, on right frame rail just rear of connector X820.		
X820	Body Rear Wiring Harness to Chassis Wiring Harness	KC9	At the rear of the vehicle, right corner, underneath, on right frame rail just forward of connector X808.		
X904A	Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness	—	Under the vehicle, left, rear of the fuel tank.		
X933	Chassis Wiring Harness to Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, left corner, underneath, on inboard side of frame rail.	• •	
X950	Liftgate Jumper Wiring Harness to Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, center, beneath truck bed, forward of endgate.	• •	
X955	Rear Object Alarm Sensor Wiring Harness to Liftgate Jumper Wiring Harness	—	At the rear of the vehicle, center, beneath truck bed, forward of endgate.	• •	
G100	Battery Negative Cable	—	In the engine compartment, right rear, mounted to engine block.		—
G101A	Body Wiring Harness	—	In the passenger compartment, under driver front seat.		—
G101B	Body Wiring Harness	—	In the engine compartment, left side, attached to the inboard side of the left body structure, near A104 Brake Master Cylinder.		—
G101C	Engine Wiring Harness	—	Under the front of the vehicle, left, attached to the front cross member.		—
G102A	Engine Wiring Harness	—	In the engine compartment, left rear, attached to the left rear of the cylinder head.		—

Code	Name	Option	Location	Locator View	Connector End View
G102B	Engine Wiring Harness	—	In the engine compartment, left rear, attached to the left rear of the cylinder head.		—
G102C	Engine Wiring Harness	—	In the engine compartment, on the front right side of the engine above G103.		—
G102D	Engine Wiring Harness	—	In the engine compartment, right rear, attached to the right rear of the cylinder head.		—
G102E	Forward Lamp Wiring Harness	—	In the engine compartment, right side, attached to the inboard side of the right body structure, forward of X50A Engine Wiring Harness Junction Block		—
G102F	Forward Lamp Wiring Harness	—	n the engine compartment, left front, attached to the inboard side of the left body structure, left lower corner.		—
G102G	Forward Lamp Wiring Harness	—	In the engine compartment, right side, attached to the inboard side of the right body structure, forward of X50A Engine Wiring Harness Junction Block	—	—
G103	Engine Wiring Harness	—	In the engine compartment, on the front right side of the engine bellow G102.		—
G104	Body Wiring Harness	—	In the engine compartment, right side, attached to the inboard side of the right body structure, rearward of X50A Engine Wiring Harness Junction Block		—
G105	Battery Negative Cable	—	In the engine compartment, right side, attached to the inboard side of the right body structure, above center of the battery.		—
G106	Engine Ground Strap	—	In the engine compartment, right, connected to the right lower engine block.	—	—
G107	Engine Ground Strap	—	In the engine compartment, right, connected to the right lower bulk head.	—	—
G176	Body Wiring Harness	—	In the passenger compartment, under driver front seat.		—
G200	Instrument Panel Wiring Harness	—	In the passenger compartment, center, under the center console, second ground from the back.		—
G201A	Engine Wiring Harness	—	In the engine compartment, on the upper support rail just to the left of the battery.		—
G201B	Battery Negative Cable	—	Under the front of the vehicle, right, attached to the front cross member.	—	—

Code	Name	Option	Location	Locator View	Connector End View
G202	Instrument Panel Wiring Harness	—	In the passenger compartment, center, under the center console, first ground towards the rear.		—
G203	Instrument Panel Wiring Harness	—	In the passenger compartment, center, under the center console, second ground from the front.		—
G204	Instrument Panel Wiring Harness	—	In the passenger compartment, center, under the center console, first ground towards the front.		—
G301A	Body Wiring Harness	—	In the passenger compartment, rear, under the left side C-pillar upper trim.		—
G301B	Body Wiring Harness	—	In the passenger compartment, rear, under the left side C-pillar upper trim.		—
G301C	Body Wiring Harness	—	In the passenger compartment, rear, behind trim panel, middle of C-pillar.		—
G304	Instrument Panel Wiring Harness	—	In the passenger compartment, right, under passenger front seat.		—
G305	Battery Negative Cable	—	In the passenger compartment, right, under passenger front seat.		—
G401A	Chassis Wiring Harness	—	Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, to the left.		—
G401B	Chassis Wiring Harness	—	Under the rear of the vehicle, right, attached to the outer rear of the frame.		—
G403	Chassis Wiring Harness	—	Under the vehicle, left side center, attached to the center box mount.		—
G405A	Chassis Wiring Harness	—	Under the vehicle, left side, attached to the frame right after the rear of the box mount.		—
G405B	Chassis Wiring Harness	—	Under the vehicle, left side, attached to the frame right after the rear of the box mount.		—
J100	Front Object Alarm Sensor Wiring Harness	—	In the front of the vehicle, approximately 25.3 cm (9.96 in) from breakout to X260 towards the E29RF Front Fog Lamp - Left.		—
J101	Front Object Alarm Sensor Wiring Harness	—	In the front of the vehicle, approximately 40.3 cm (15.86 in) from E29RF Front Fog Lamp - Left towards breakout to X260.		—

Code	Name	Option	Location	Locator View	Connector End View
J102	Forward Lamp Wiring Harness	—	In the left front of engine compartment, approximately 46.1 cm (18.4 in) from E13LA Front Headlamp - Left.		—
J103	Forward Lamp Wiring Harness	—	In the engine compartment, approximately 6.9 cm (2.71 in) from breakout to P13 horn towards connector X150.		—
J104	Forward Lamp Wiring Harness	—	In the engine compartment, approximately 5.1 cm (2 in) from breakout to connector X250R towards center of vehicle.		—
J105	Body Wiring Harness	—	In the engine compartment, approximately 28.1 cm (11 in) from grommet at the bulkhead towards outside of vehicle.		—
J106	Body Wiring Harness	—	In the engine compartment, approximately 31.3 cm (12.3 in) from breakout to grommet at the bulkhead towards outside of vehicle.		—
J107	Body Wiring Harness	—	In the engine compartment, approximately 36.3 cm (14.3 in) from breakout to grommet at the bulkhead towards outside of vehicle.		—
J108	Chassis Wiring Harness	—	In the front of the vehicle, center, approximately 24.7 cm (9.72 in) from M96B Active Grille Air Shutter Actuator 2.		—
J109	Chassis Wiring Harness	—	In the engine compartment, left side, approximately 19.2 cm (7.55 in) from connector X100.		—
J110	Body Wiring Harness	—	In the engine compartment, approximately 5 cm (1.9 in) from breakout to X101 and X199 towards the bulkhead.		—
J111	Body Wiring Harness	—	In the engine compartment, approximately 46.3 cm (18.22 in) from connector X160.		—
J112	Body Wiring Harness	—	In the engine compartment, approximately 21.8 cm (8.58 in) from K160 Brake System Control Module.		—
J113	Body Wiring Harness	—	In the engine compartment, approximately 11.3 cm (4044 in) from breakout to G101A towards the front of the vehicle.		—
J114	Body Wiring Harness	—	In the engine compartment, approximately 5 cm (1.9 in) from breakout to G101A towards the front of the vehicle.		—

Code	Name	Option	Location	Locator View	Connector End View
J115	Chassis Wiring Harness	—	In the engine compartment, right front, approximately 26 cm (10.23 in) from X50A Engine Wiring Harness Junction Block X1.		—
J116	Chassis Wiring Harness	—	Under the vehicle, right side center, approximately 62.5 cm (124.6 in) from breakout to X50A Engine Wiring Harness Junction Block X1, at front cab mount.		—
J120	Engine Wiring Harness	—	In the engine compartment, right side, approximately 10.2 cm (4 in) from X50A Engine Wiring Harness Junction Block X2.		—
J121	Engine Wiring Harness	—	In the engine compartment, right side, approximately 15.2 cm (5.98 in) from X50A Engine Wiring Harness Junction Block X2.		—
J122	Engine Wiring Harness	—	In the engine compartment, right side, approximately 13 cm (5.11 in) from breakout to G201A going towards the rear.		—
J123	Engine Wiring Harness	—	In the engine compartment, right rear, approximately 13.4 cm (9.25 in) from breakout to connector X201 going forward to the front.		—
J124	Engine Wiring Harness	—	In the engine compartment, right rear, approximately 13.4 cm (5.27 in) from breakout to connector X201 going forward to the front.		—
J125	Engine Wiring Harness	—	In the engine compartment, right rear, approximately 8.1 cm (3.11 in) from breakout to connector X201 going forward to the front.		—
J126	Engine Wiring Harness	—	In the engine compartment, right, approximately 18.8 cm (7.4 in) from breakout to connector X204.		—
J127	Engine Wiring Harness	—	In the engine compartment, right, approximately 4.5 cm (1.77 in) from breakout to connector X204 going forward to the front.		—
J128	Engine Wiring Harness	—	In the engine compartment, right front, approximately 6.9 cm (2.71 in) from breakout to Q12 Evaporative Emission Canister Purge Solenoid Valve.		—

Code	Name	Option	Location	Locator View	Connector End View
J129	Engine Wiring Harness	—	In the engine compartment, right front, approximately 10 cm (3.93 in) from breakout to Q12 Evaporative Emission Canister Purge Solenoid Valve.		—
J130	Engine Wiring Harness	—	In the engine compartment, top front of engine, approximately 4.5 cm (1.77 in) from breakout to M130B Exhaust Camshaft Profile Actuator 2.		—
J131	Engine Wiring Harness	—	In the engine compartment, front center of engine, approximately 10 cm (3.93 in) from breakout to G102C.		—
J132	Engine Wiring Harness	—	In the engine compartment, front top left of engine, approximately 19.7 cm (7.75 in) from breakout to G102C.		—
J133	Engine Wiring Harness	—	In the engine compartment, top right of engine, approximately 5 cm (1.96 in) from breakout to B321 Crankcase Pressure Sensor.		—
J134	Engine Wiring Harness	—	In the engine compartment, top right of engine, approximately 3.9 cm (1.53 in) from breakout to B321 Crankcase Pressure Sensor.		—
J135	Engine Wiring Harness	—	In the engine compartment, front center of engine, approximately 4.5 cm (1.77 in) Q6F Camshaft Position Actuator Solenoid Valve - Intake.		—
J136	Engine Wiring Harness	—	In the engine compartment, front center of engine, approximately 10 cm (3.93 in) Q6F Camshaft Position Actuator Solenoid Valve - Intake.		—
J137	Engine Wiring Harness	—	In the engine compartment, right rear, approximately 7.6 cm (2.99 in) from breakout to B52B Heated Oxygen Sensor 2.		—
J138	Engine Wiring Harness	—	In the engine compartment, top left of engine, approximately 5 cm (1.96 in) from breakout to Q38 Throttle Body.		—
J139	Engine Wiring Harness	—	In the engine compartment, bottom left of engine, approximately 12.2 cm (4.80 in) from M64 Starter.		—

Code	Name	Option	Location	Locator View	Connector End View
J140	Engine Wiring Harness	—	In the engine compartment, top left of engine, approximately 4 cm (15.74 in) from breakout to T8B Ignition Coil 2.		—
J141	Engine Wiring Harness	—	In the engine compartment, top left of engine, approximately 7.2 cm (2.83 in) from breakout to G58 Evaporative Emission Canister Purge Pump.		—
J142	Engine Wiring Harness	—	In the engine compartment, left, approximately 33.3 cm (13.11 in) from B75 Mass Airflow Sensor.		—
J143	Engine Wiring Harness	—	In the engine compartment, top left rear, approximately 3.4 cm (1.33 in) from breakout to T8C Ignition Coil 3.		—
J144	Engine Wiring Harness	—	In the engine compartment, left, approximately 5 cm (1.96 in) from B75 Mass Airflow Sensor.		—
J145	Engine Wiring Harness	—	In the engine compartment, approximately 4.8 cm (1.88 in) from breakout to B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor.		—
J146	Engine Wiring Harness	—	In the engine compartment, approximately 9.8 cm (3.85 in) from breakout to B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor.		—
J147	Engine Wiring Harness	—	In the engine compartment, left, approximately 9 cm (3.54 in) from B75 Mass Airflow Sensor.		—
J148	Engine Wiring Harness	—	In the engine compartment, left, approximately 10.2 cm (4.01 in) from breakout to connector X160.		—
J149	Engine Wiring Harness	—	In the engine compartment, left, approximately 8 cm (3.14 in) from breakout to G101C.		—
J150	Engine Wiring Harness	—	In the engine compartment, left, approximately 8 cm (3.14 in) from breakout to G10L Cooling Fan Motor - Left.		—
J151	Engine Wiring Harness	—	In the engine compartment, left, approximately 13.1 cm (5.15 in) from breakout to K69 Transfer Case Control Module.		—
J152	Engine Wiring Harness	—	In the engine compartment, left, approximately 8.1 cm (3.18 in) from breakout to K69 Transfer Case Control Module.		—

Code	Name	Option	Location	Locator View	Connector End View
J175	Automatic Transmission Wiring Harness	—	Under the vehicle, within T12 Automatic Transmission.	—	—
J176	Automatic Transmission Wiring Harness	—	Under the vehicle, within T12 Automatic Transmission.	—	—
J177	Automatic Transmission Wiring Harness	—	Under the vehicle, within T12 Automatic Transmission.	—	—
J200	Body Wiring Harness	—	In the passenger compartment, inside the instrument approximately 22.6 cm (8.9 in) from breakout to the grommet on the left side bulkhead under instrument panel.		—
J201	Body Wiring Harness	—	In the passenger compartment, inside the instrument approximately 16 cm (6.3 in) from breakout to B22 Brake Pedal Position Sensor towards center of vehicle.		—
J202	Body Wiring Harness	—	In the passenger compartment, inside the instrument approximately 17.3 cm (6.81 in) from breakout to B107 Accelerator Pedal Position Sensor towards center of vehicle.		—
J203	Body Wiring Harness	—	In the passenger compartment, inside the instrument approximately 16.6 cm (6.53 in) from breakout to B107 Accelerator Pedal Position Sensor towards center side of vehicle.		—
J204	Body Wiring Harness	—	In the passenger compartment, inside the instrument panel approximately 67 cm (24.3 in) from breakout to grommet at the bulkhead inside on passenger side of vehicle.		—
J205	Body Wiring Harness	—	In the passenger compartment, inside the instrument panel approximately 60 cm (23.6 in) from breakout to grommet at the bulkhead inside on passenger side of vehicle.		—
J206	Body Wiring Harness	—	In the passenger compartment, inside the instrument panel, approximately 45 cm (17.7 in) from breakout to grommet at the bulkhead inside on passenger side of vehicle.		—

Code	Name	Option	Location	Locator View	Connector End View
J207	Body Wiring Harness	—	In the passenger compartment, inside the instrument panel, approximately 25.8 cm (10.15 in) from grommet at the bulkhead inside on let side of vehicle.		—
J208	Instrument Panel Wiring Harness	—	Behind the instrument panel, left side, in main bundle, approximately 12.3 cm (4.84 in) from breakout to X84 Data Link Connector.		—
J209	Instrument Panel Wiring Harness	—	Behind the instrument panel, left side, in main bundle left of steering column, approximately 26.7 cm (10.51 in) from breakout to K157 Video Processing Module X2.		—
J210	Instrument Panel Wiring Harness	—	Behind the instrument panel, left side, in main bundle left of steering column, approximately 7.5 cm (2.95 in) from breakout to K157 Video Processing Module X2.		—
J211	Instrument Panel Wiring Harness	—	Behind the instrument panel, left side, in main bundle above steering column, approximately 5 cm (1.96 in) from breakout to P16 Instrument Panel Cluster Control Module.		—
J212	Instrument Panel Wiring Harness	—	Behind the instrument panel, left center, approximately 34.9 cm (13.74 in) from breakout going back towards center console.		—
J213	Instrument Panel Wiring Harness	—	Behind the instrument panel, left center, approximately 29.7 cm (11.69 in) from breakout going back towards center console.		—
J214	Instrument Panel Wiring Harness	—	Behind the instrument panel, left center, approximately 19.9 cm (7.83 in) from breakout going back towards center console.		—
J215	Instrument Panel Wiring Harness	—	In the floor console, in the main bundle, approximately 5 cm (1.96 in) reward of breakout to rear to connectors X304 and X305.		—
J216	Instrument Panel Wiring Harness	—	In the floor console, in the main bundle, approximately 15.9 cm (6.25 in) reward of breakout to rear to connectors X304 and X305.		—

Code	Name	Option	Location	Locator View	Connector End View
J217	Instrument Panel Wiring Harness	—	In the floor console, in the main bundle, approximately 27.4 cm (10.78 in) reward of breakout to rear to connectors X304 and X305.		—
J218	Instrument Panel Wiring Harness	—	In the floor console, in the main bundle, approximately 32.2 cm (12.67 in) reward of breakout to rear to connectors X304 and X305.		—
J219	Instrument Panel Wiring Harness	—	Behind the instrument panel, center top, in main bundle approximately 16.8 cm (6.6 in) from breakout S26 Hazard Warning Switch.		—
J220	HVAC Wiring Harness	—	Internal in HVAC harness.	—	—
J221	HVAC Wiring Harness	—	Internal in HVAC harness.	—	—
J222	Instrument Panel Wiring Harness	—	Behind the instrument panel, center top, in main bundle approximately 11.7 cm (4.6 in) from breakout S26 Hazard Warning Switch.		—
J223	Instrument Panel Wiring Harness	—	Behind the instrument panel, center right, approximately 26 cm (10.23 in) from breakout in main bundle towards S26 Hazard Warning Switch.		—
J224	Instrument Panel Wiring Harness	—	Behind the instrument panel, right, in main bundle approximately 17.9 cm (7.04 in) from breakout to F101 Instrument Panel Airbag.		—
J225	Instrument Panel Wiring Harness	—	Behind the instrument panel, right, in main bundle approximately 5 cm (1.98 in) from breakout to F101 Instrument Panel Airbag.		—
J226	Instrument Panel Wiring Harness	—	Behind the instrument panel, far right, off main bundle approximately 22.9 cm (9 in) from breakout to A11 Radio.		—
J227	Instrument Panel Wiring Harness	—	Behind the instrument panel, far right, off main bundle approximately 10.8 cm (4.25 in) from breakout to A11 Radio.		—
J228	Instrument Panel Wiring Harness	—	Behind the instrument panel, far right, in main bundle approximately 5 cm (1.98 in) from breakout to A11 Radio.		—
J229	Instrument Panel Wiring Harness	—	Behind the instrument panel, far right, in main bundle approximately 14.8 cm (5.82 in) from breakout to A11 Radio.		—

Code	Name	Option	Location	Locator View	Connector End View
J230	Instrument Panel Wiring Harness	—	Behind the instrument panel, far right, in main bundle approximately 9.8 cm (3.8 in) from breakout to A11 Radio.		—
J231	HVAC Wiring Harness	—	Internal in HVAC harness.	—	—
J240	Steering Wheel Wiring Harness	—	Internal in steering wheel harness.	—	—
J241	Steering Wheel Wiring Harness	—	Internal in steering wheel harness.	—	—
J300	Body Wiring Harness	—	In the passenger compartment, inside the instrument panel, approximately 14.4 cm (5.6 in) from breakout to B22 Brake Pedal Position Sensor.		—
J301	Body Wiring Harness	—	In the passenger compartment, approximately 6.2 cm (2.44 in) from connector X301 in the left front kick panel..		—
J302	Body Wiring Harness	—	In the passenger compartment, approximately 10 cm (4 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—
J303	Body Wiring Harness	—	In the passenger compartment, approximately 15 cm (6 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—
J304	Body Wiring Harness	—	In the passenger compartment, approximately 20 cm (8 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—
J305	Body Wiring Harness	—	In the passenger compartment, approximately 28 cm (11 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—
J306	Body Wiring Harness	—	In the passenger compartment, approximately 33 cm (13 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—
J307	Body Wiring Harness	—	In the passenger compartment, approximately 38 cm (15 in) from breakout to connectors X300 and X301 towards rear of vehicle.		—

Code	Name	Option	Location	Locator View	Connector End View
J308	Body Wiring Harness	—	In the passenger compartment, approximately 18.7 cm (7.36 in) from breakout to G101B and G175 towards the front of vehicle.		—
J309	Body Wiring Harness	—	In the passenger compartment, approximately 8.7 cm (3.42 in) from breakout to G101B and G175 towards the front of vehicle.		—
J310	Body Wiring Harness	—	In the passenger compartment, approximately 14.2 cm (5.6 in) from breakout to G101B and G175 towards the left side of vehicle.		—
J311	Body Wiring Harness	—	In the passenger compartment, approximately 7 cm (2.75 in) from breakout to G101B and G175 towards the rear of vehicle.		—
J312	Body Wiring Harness	—	In the passenger compartment, approximately 9.2 cm (3.62 in) from breakout to G101B and G175 towards the rear of vehicle.		—
J313	Body Wiring Harness	—	In the passenger compartment, approximately 14 cm (5.5 in) from X503 towards the left side of vehicle.		—
J314	Body Wiring Harness	—	In the passenger compartment, approximately 13 cm (5.11 in) from cannel in left side center towards the front side of vehicle.		—
J320	Body Wiring Harness	—	In the passenger compartment, approximately 18 cm (7.8 in) from breakout to X400 near the right lower A-Pillar.		—
J321	Body Wiring Harness	—	In the passenger compartment, approximately 28 cm (11 in) from breakout to X400 front of passenger door sill.		—
J322	Body Wiring Harness	—	In the passenger compartment, approximately 42 cm (16.53 in) from breakout to X400 middle of passenger front door sill.		—
J323	Body Wiring Harness	—	In the passenger compartment, approximately 8.5 cm (3.34 in) after the breakout to G304 and G305.		—

Code	Name	Option	Location	Locator View	Connector End View
J324	Body Wiring Harness	—	In the passenger compartment, approximately 10 cm (3.93 in) from breakout to G304 and G305 of main channel on right side of vehicle.		—
J325	Body Wiring Harness	—	In the passenger compartment, approximately 23.1 cm (9 in) from breakout to X402A and X402B.		—
J326	Body Wiring Harness	—	In the passenger compartment, approximately 8.3 cm (3.26 in) from breakout to F113P Front Seat Belt Anchor Plate Tensioner - Passenger towards center of vehicle.		—
J327	Body Wiring Harness	—	In the passenger compartment, approximately 20.7 cm (8.14 in) from connector X604.		—
J328	Body Wiring Harness	—	In the passenger compartment, approximately 31.6 cm (12.44 in) from T19 Multifunction Power Supply Converter connector.		—
J330	Front Floor Console Wiring Harness	—	In the floor console, in the main bundle, approximately 7.9 cm (3.1 in) forward of connector X305.		—
J331	Front Floor Console Wiring Harness	—	In the floor console, in the main bundle, forward of the P2 Automatic Transmission Control Indicator.		—
J340	Front Seat Wiring Harness - Driver	—	In the driver seat, approximately 4 cm (1.57 in) forward of breakout to M73D Front Seat Cushion Ventilation Blower - Driver.		—
J341	Front Seat Wiring Harness - Driver	—	In the driver seat, approximately 7 cm (2.75 in) forward of breakout to M73D Front Seat Cushion Ventilation Blower - Driver.		—
J342	Front Seat Wiring Harness - Driver	—	In the driver seat, approximately 2 cm (.78 in) forward of breakout to M50D Front Seat Tilt Adjuster Actuator - Driver.		—
J343	Front Seat Wiring Harness - Driver	—	In the driver seat, approximately 2 cm (.78 in) forward of breakout to K40D Driver Seat Adjuster Memory Module.		—
J344	Front Seat Wiring Harness - Driver	—	In the driver seat, approximately 6.5 cm (2.55 in) reward of breakout to K40D Driver Seat Adjuster Memory Module.		—

Code	Name	Option	Location	Locator View	Connector End View
J345	Front Seat Wiring Harness - Driver	—	In the driver seat, in branch to inboard items, approximately 11 cm (4.33 in) of breakout to P45R Front Seat Lane Departure Warning Actuator - Right.		—
J346	Front Seat Wiring Harness - Driver	—	In the driver seat, in branch to inboard items, approximately 7 cm (2.75 in) of breakout to P45R Front Seat Lane Departure Warning Actuator - Right.		—
J347	Front Seat Wiring Harness - Passenger	—	In the passenger seat, in the branch, approximately 5 cm (1.96 in) forward of breakout to K29FV Front Seat Heater Vent Control Module.		—
J348	Front Seat Wiring Harness - Passenger	—	In the passenger seat, in the branch, approximately 15 cm (5.9 in) forward of breakout to K29FV Front Seat Heater Vent Control Module.		—
J349	Front Seat Wiring Harness - Passenger	—	In the passenger seat, in the branch, approximately 7 cm (2.75 in) of breakout to M51P Front Seat Adjuster Actuator - Passenger.		—
J350	Front Seat Wiring Harness - Passenger	—	In the passenger seat, in the branch, approximately 10 cm (3.93 in) of breakout to M51P Front Seat Adjuster Actuator - Passenger.		—
J351	Front Seat Wiring Harness - Passenger	—	In the passenger seat, in the branch, approximately 3 cm (1.18 in) of breakout to connector X402B		—
J360	Headlining Wiring Harness	—	In the passenger compartment, left front, in harness channel behind right front A-pillar trim panel, approximately 32.8 cm (12.91 in) from connector X401.	• •	—
J361	Headlining Wiring Harness	—	• (-CAC) In the passenger compartment, left front of headliner, approximately 26 cm (10.23 in) before breakout to A103 Roof Console • (CAC) In the passenger compartment, right center of headliner, approximately 5 cm (1.96 in) before breakout to A3R Sunshade - Right	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J362	Headlining Wiring Harness	—	• (-CAC) In the passenger compartment, center front of headliner, approximately 15 cm (5.9 in) after breakout to A103 Roof Console • (CAC) In the passenger compartment, right center front of headliner, approximately 42.4 cm (16.69 in) after breakout to A3R Sunshade - Right.	• •	—
J363	Headlining Wiring Harness	—	• (-CAC) In the passenger compartment, right front of headliner, approximately 24 cm (9.44 in) before breakout to S51 Communication Center Call Switch • (CAC) In the passenger compartment, center of headliner, approximately 6 cm (2.36 in) before breakout to S51 Communication Center Call Switch	• •	—
J364	Headlining Wiring Harness	—	• (-CAC) In the passenger compartment, right side of headliner, approximately 29.4 cm (11.57 in) before breakout to J363 • (CAC) In the passenger compartment, right side of headliner, approximately 100.9 cm (39.72 in) before breakout to K77 Remote Function Actuator Module.	• •	—
J365	Headlining Wiring Harness	—	• (-CAC) In the passenger compartment, right side of headliner, approximately 26 cm (10.23 in) before breakout to A103 Roof Console • (CAC) In the passenger compartment, left front of headliner, approximately 14 cm (155.11 in) before breakout to A3L Sunshade - Left .	• •	—
J366	Headlining Wiring Harness	—	In the passenger compartment, left center front of headliner, approximately 7.5 cm (2.95 in) after breakout to A3L Sunshade - Left .		—
J368	Body Wiring Harness	—	In the passenger compartment, approximately 13 cm (5.11 in) from cannel in left side center towards the front side of vehicle.	—	—

Code	Name	Option	Location	Locator View	Connector End View
J400	Chassis Wiring Harness	—	Under rear of vehicle, right rear frame rail, approximately 63.3 cm (24.9 in) before rear cross member.		—
J401	Chassis Wiring Harness	—	Under rear of vehicle, center of rear cross member, approximately 42.7 cm (16.81 in) inboard of breakout from left frame rail,.		—
J402	Chassis Wiring Harness	—	Under rear of vehicle, center of rear cross member, approximately 32.7 cm (12.87 in) inboard of breakout from left frame rail,.		—
J403	Chassis Wiring Harness	—	Under rear of vehicle, center of rear cross member, approximately 21.9 cm (9.62 in) inboard of breakout from left frame rail,.		—
J404	Chassis Wiring Harness	—	Under rear of vehicle, center of rear cross member, approximately 12.1 cm (4.76 in) inboard of breakout from left frame rail,.		—
J405	Chassis Jumper Wiring Harness	—	Internal in the Jumper harness.	—	—
J406	Chassis Wiring Harness	—	Under the vehicle, right side fame rail, approximately 11.6 cm (4.50 in) after breakout to the K38 Chassis Control Module.		—
J407	Chassis Wiring Harness	—	Under the vehicle, approximately 11.6 cm (4.50 in) before breakout to the K67 Trailer Brake Control Module.		—
J408	Chassis Wiring Harness	—	Under the vehicle, right side frame rail, approximately 12 cm (4.72 in) before breakout to G401B.		—
J409	Chassis Wiring Harness	—	Under the vehicle, inboard left side frame rail, approximately 11.4 cm (4.48 in) before K111 Fuel Pump Power Control Module.		—
J410	Chassis Wiring Harness	—	Under the vehicle, rear, approximately 4.8 cm (1.88 in) before K111 Fuel Pump Power Control Module behind fuel tank.		—
J411	Chassis Wiring Harness	—	Under the vehicle, rear, approximately 31.1 cm (12.24 in) before breakout to G401A.		—
J413	Chassis Wiring Harness	—	Under the vehicle, right side frame rail, approximately 5 cm (2 in) before breakout to G401B.		—

Code	Name	Option	Location	Locator View	Connector End View
J414	Chassis Wiring Harness	—	Under the vehicle, rear, approximately 9.9 cm (3.89 in) before breakout to G401A.		—
J415	Chassis Wiring Harness	—	Under the vehicle, rear, approximately 5.1 cm (2 in) after breakout to G401A.		—
J416	Chassis Wiring Harness	—	Under the vehicle, left side, approximately 3 cm (2.36 in) from breakout to A7 Fuel Tank Fuel Pump Module.		—
J420	Chassis Wiring Harness	—	Accessory Package Component,.	—	—
J500	Front Side Door Door Wiring Harness - Driver	—	Inside the center front of the driver door, approximately 14.4 cm (5.66 in) from the breakout to S13D Door Lock Switch - Driver.	• •	—
J501	Front Side Door Door Wiring Harness - Driver	—	Inside the front of the driver door, approximately 18.7 cm (7.36 in) from connector X303.	• •	—
J502	Front Side Door Door Wiring Harness - Driver	—	Inside the bottom front of the driver door, approximately 27.4 cm (10.78 in) from the breakout to B63LF Airbag Side Impact Sensor - Left Front Door.	• •	—
J600	Front Side Door Door Wiring Harness - Passenger	—	Inside the center front of the passenger door, approximately 14.4 cm (5.66 in) from the breakout to S13P Door Lock Switch - Passenger.	• •	—
J601	Front Side Door Door Wiring Harness - Passenger	—	Inside the bottom front of the passenger door, approximately 27.4 cm (10.78 in) from the breakout to B63RF Airbag Side Impact Sensor - Right Front Door.	• •	—
J700	Rear Side Door Door Wiring Harness - Left	—	Inside left rear door, approximately 24.4 cm (9.6 in) from the breakout to P19AL Radio Rear Side Door Speaker - Left.		—
J800	Rear Side Door Door Wiring Harness - Right	—	Inside right rear door, approximately 24.4 cm (9.6 in) from the breakout to P19AM Radio Rear Side Door Speaker - Right.		—
J900	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia right side, approximately 5 cm (2 in) from the breakout to E7L Rear License Plate Lamp - Left.		—
J901	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia center right side, approximately 3 cm (2 in) from the breakout to X950 connector.		—

Code	Name	Option	Location	Locator View	Connector End View
J902	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia center left side, approximately 5 cm (2 in) from the breakout to X955 connector.		—
J903	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia left side, approximately 5 cm (2 in) from the breakout E7R Rear License Plate Lamp - Right.		—
J904	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia left side, approximately 20 cm (7.87 in) from the connector X700.		—
J905	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia left side, approximately 33.6 cm (13.22 in) from B218L Side Obstacle Detection Control Module - Left.		—

Description and Operation

Power Mode Description and Operation

Serial Data Power Mode Master

The K9 Body Control Module (BCM) is the Power Mode Master and the K56 Serial Data Gateway Module is the Back-Up Power Mode Master.

The Power Mode Master uses various vehicle status conditions and inputs to determine the desired vehicle power mode state. The Power Mode (Off, Accessory, Run, Propulsion, Start) is communicated to other modules via Serial Data and other electrical signals in order to provide the proper feature operation for the appropriate power mode.

If the Power Mode Master cannot control or determine the correct Power Mode, the Backup Power Mode Master will take over and become the vehicle Power Mode Master and place the vehicle into the proper Power Mode by communicating with other modules via Serial Data to provide the proper electrical signals to provide the proper feature operation for the appropriate power mode.

S38 On/Off Vehicle Switch

There are 5 power modes to convey driver intent:

- OFF – A low power mode that allows maximum stand time until next start
- ACCY – Allows use of certain features that require operator authorization (Power windows for example). Propulsion is specifically disallowed.
- RUN – All features enabled except propulsion (motive force)
- PROPULSION – All features enabled
- START - This will transition to PROPULSION, including turning off non-essential loads to provide additional power for starting.

Power Mode States

Customer Action	Expected Vehicle Power Mode	S38 Vehicle On/Off Switch BCM Scan Tool Parameter	S38 Vehicle On/Off Switch Voltages
Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter in Range	Vehicle Off Mode	Inactive	1.4 – 3.0 V (Switch Pressed) 3.35 – 4.26 V (Switch Released) 4.5 — 5.0 V (Switch Disconnected)
Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter out of Range/Away from vehicle	Vehicle Off Mode	Inactive	

Customer Action	Expected Vehicle Power Mode	S38 Vehicle On/Off Switch BCM Scan Tool Parameter	S38 Vehicle On/Off Switch Voltages
Vehicle in any Power Mode EXCEPT OFF, then Press the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter in Vehicle	Vehicle Off Mode	Active (pushed) / Inactive (not pushed)	
Vehicle in Propulsion Mode, momentarily Press and Release the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter out of Range/Away from vehicle	Run Mode, With DIC Message No Remote Detected Press Brake to Restart	Active (pushed) Inactive (not pushed)	
Vehicle Off Power Mode, then Press the S38 On/Off Vehicle Switch for less than 5 s with foot Off the Brake Pedal; Transmitter in Vehicle	Vehicle Accessory Mode	Active (pushed) / Inactive (not pushed)	
Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal; Transmitter in Vehicle	Vehicle Start/Propulsion Mode (vehicle cranks then engine running (for Internal Combustion Engine) or Propulsion System Active for EV) power mode timeout is enabled	Active (pushed) / Inactive (not pushed)	
Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal for 5 to 10 s; Transmitter in Vehicle	Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Mode Active) power mode timeout will be disabled.	Active (pushed) / Inactive (not pushed)	
Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle	Vehicle Run Mode (Ignition ON without the Propulsion system Active)	Active (pushed) / Inactive (not pushed)	
Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle	Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Active) power mode timeout is disabled	Active (pushed) / Inactive (not pushed)	
Vehicle Propulsion Mode with vehicle speed detected above 4 km/h (2.5 MPH) press and hold S38 On/Off Vehicle Switch for 2 s or press and release it 2 times within 5 S.	Vehicle will transition from Propulsion Mode to Run Mode (Ignition On Propulsion system Inactive).	Active (pushed) / Inactive (not pushed)	
NOTE: If the transmitter is not moved for more than 1 hour it will become inactive.			

Service Mode

Service Mode is the Run Power Mode with power mode timeout disabled. This can only be done with the Service Tool.

Automatic Power Mode Timeouts

Note: If the Transmitter/Fob remains stationary and is not moved for one hour, it will go to sleep and may create a fob not in range condition.

This system is designed to prevent batteries from going dead in the event the ignition is left on while unattended, it is also designed to shut the vehicle off if left running unattended. After a Power Mode timeout, the Power Mode Master is responsible for shutting down the or transitioning the vehicle into the low parasitic sleep state “OFF” Power Mode. This Power Mode timeout strategy uses Vehicle Speed, Vehicle Power Mode, Parked Status and other Vehicle Conditions to make the timeout determination.

Accessory Power Mode

The Accessory Power Mode will timeout after approximately 5 minutes. The timer will Start once the system has determined it is in the Accessory Power Mode status. After the timer expires the Power Mode will change to the OFF Power Mode.

Run Power Mode
If the conditions listed below are met the Run Power Mode will timeout after approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Run Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to OFF Power Mode.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Run Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Run Mode (Vehicle powered up S38 On/Off Vehicle Switch Green indicator on Propulsion Mode Inactive)
- Propulsion is Inactive
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.
- Fast Idle is inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)
- S38 Vehicle On/Off switch is held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

Propulsion Power Mode
If the following conditions listed below are met the Propulsion Power Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Propulsion Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to the OFF Power Mode.

The Propulsion Power Mode timeout can be disabled with the vehicle in Off Power Mode, apply and continue to hold the brake pedal, then press and hold the S38 Vehicle On/Off switch for 5 to 10 seconds (the actual time may vary based on model and/or year). A DIC message will be displayed when Power Mode timeout is disabled.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Propulsion Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Propulsion Mode (Propulsion Active).
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.
- Fast Idle is Inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)
- S38 Vehicle On/Off switch iss held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

Relay Controlled Power Mode

The BCM uses discrete push button switch inputs, transmitter in range status, current power mode state, and brake pedal position state to distinguish the correct power mode (Off, Accessory Mode, Run Mode, Start/ Propulsion Mode). The BCM, after determining the desired power mode, will activate the appropriate relays for that power mode.

The retained accessory power relay remains on for a timed period after the Ignition Mode is OFF. Refer to *Retained Accessory Power Description and Operation 7-687* for more information on the retained accessory power function.

Push Button Start

The ignition mode switch has 2 LEDs that indicate the vehicle power mode Amber for Accessory Mode and Green for Run or Start/Propulsion Modes. When the vehicle is in the OFF mode, both LED’s will be OFF. Momentarily pressing the S38 On/Off Vehicle Switch button once, brake pedal not applied, the vehicle will enter into the Accessory Mode and the Amber LED will illuminate. The Accessory Mode will timeout after approximately 5 min to help reduce battery drain. With the ignition OFF, brake pedal not pressed, then pressing and holding the S38 On/Off Vehicle Switch for 5 s will place the vehicle in Run Mode (Ignition ON without the Propulsion Mode Active). The vehicle will stay powered up for approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range, and the Green LED will illuminate.

With the ignition OFF brake pedal pressed, then press and release the S38 On/Off Vehicle Switch, the vehicle will enter Start/Propulsion Mode and the Green LED will illuminate, the engine will crank and the engine will be running for Internal Combustion Engines (ICE), or Propulsion mode will go Active on Electric Vehicles (EV). The Propulsion Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will stop when the vehicle is shifted out of PARK or the brake pedal is pressed and released, the timer will reset after the vehicle is placed back in PARK with the Propulsion Mode Active.

Both LED's have the voltage supplied from the body control module (BCM). The ignition mode switch sends the ignition mode switch status to the passive entry passive start module (PEPS) and to the BCM. The PEPS module sends a redundant signal to the BCM with the ignition mode switch status.

Transport Mode

Transport Mode is designed to reduce the parasitic load of some modules during shipping and/or during vehicle storage. Some features may be disabled or have reduced functionality while Transport Mode is ON. Transport Mode is enabled and disabled by either of the following methods:

- With the Scan Tool Diagnostics > Body Control Module > Control Functions > Power Mode.
- Turning the hazard flashers ON, apply and hold the brake pedal, then press and hold the ignition mode switch for greater than 15 s. For vehicles equipped with a DIC a message Transport Mode On when it is enabled and Transport Mode Off when it is disabled will be displayed for a predetermined amount of time. For vehicles equipped without a DIC, the battery indicator light will constantly flash on the Instrument Cluster when Transport Mode is enabled.

Battery Saver Mode

There are 7 different Battery Saver Modes. Battery Saver Modes 1 to 3 occur in Accessory and Run Power Modes (vehicle on propulsion system Inactive) if the battery voltage drops below approximately 11.5 V. Battery Saver Modes 4 to 7 occur in the Off Power Mode only. Battery Saver Modes 4 to 7 may set DTC's.

- Battery Saver Mode 1: DIC message "Battery Low, Start Vehicle", 4 chimes
- Battery Saver Mode 2: DIC message "Battery Low, Start Vehicle", Load Shed Level 3 is activated
- Battery Saver Mode 3: DIC message "Battery Low, Start Vehicle", Radio/Infotainment shut off, Load Shed Level 3 active
- Battery Saver Mode 4: Battery Saver Mode Ignition Off – Parasitic Current draw of 100 mA or greater
- Battery Saver Mode 5: Battery Saver Mode Ignition Off – Parasitic Current draw of 1 A or greater
- Battery Saver Mode 6: Battery Saver Mode Ignition Off – Battery Voltage less than 12.0 V
- Battery Saver Mode 7: Battery Saver Mode Ignition Off – Battery Voltage less than 11.6 V

Load Shedding

Prior to Load shedding Idle Boost will occur, the idle speeds will be increased by 25 to 300 RPM to help maintain a normal battery voltage. Idle Boost may be noticeable to the driver. If the battery voltage continues to drop below a normal state then load shedding will go active and it will start to reduce electric loads for components that will not impact the safe operation of vehicle. At load shed levels 2 and 3 a DIC message will be displayed "Reducing Features To Save Battery". When load shedding is active the customer may begin to notice features starting to have reduced functions or may become inoperative. Examples of affected loads are radio, HVAC blower(s) front and rear (if equipped), heated/ventilated seats, heated mirrors, rear defogger and other devices with heavy electrical draws. Idle Boost and load shed levels can be observed with the scan tool.

Idle Boost 1
Idle is increased by 25-100 RPM and generally is not noticeable to most drivers.

Idle Boost 2
Idle is increased by 50–200 RPM and generally is not noticeable to most drivers.

Idle Boost 3
Idle is increased by 100–300 RPM and may be noticeable to most drivers.

Load Shed Level 1
Reduces load current by 25%.

Load Shed Level 2
Reduces load current by 50%.

Load Shed Level 3
Electric loads for components that will not impact the safe operation of vehicle will be turned Off.

BCM Awake/Sleep States

The BCM is able to control or perform all of the BCM functions in the awake state. The BCM enters the sleep state when active control or normal monitoring of system functions has stopped and a time limit has passed. The BCM must detect certain wake-up inputs before entering the awake state. The BCM monitors for these inputs during the sleep state.

The BCM will enter the awake state if any of the following wake-up inputs are detected:

- Activity on the serial data line
- Detection of a battery reconnect
- Any door open signal
- Headlamps ON
- Ignition ON

- Park lamps ON
- Keyless entry or remote start message

The BCM will enter a sleep state when all of the following conditions exist:

- Ignition OFF, transmitter is out of range
- No activity exists on the serial data line.
- No outputs are commanded.
- No delay timers are actively counting.
- No wake-up inputs are present.

If all these conditions are met, the BCM will enter a low power or sleep condition.

Retained Accessory Power Description and Operation

Retained Accessory Power

The Retained Accessory Power (RAP) & Interruptible RAP (IRAP) Circuits are controlled by the K9 Body Control Module (BCM). The BCM is the Power Mode Master, it utilizes various Vehicle inputs to determine the Vehicle Power Mode and sends this information via Serial Data and providing associated electrical signals to the entire vehicle for proper feature operation.

The BCM monitors the vehicles power modes, and door ajar/open switch status to determine whether the retained accessory power should be initiated and remain active or be terminated. The RAP output is optional based on the vehicles option contents. When utilized, the RAP Output control can be used to control a RAP Relay, it may provide direct power, or a serial data message to vehicle devices/modules from the BCM.

Retained Accessory Power Relay Coil Control Circuit (If Equipped)

The BCM keeps the device or relay (if equipped) energized during all power modes, except Off-Awake and Crank. The device(s) remain active for approximately 10 min after the Vehicle is placed into the OFF Power Mode, provided none of the doors are opened.

Retained accessory power will end when one of the following conditions are met:

- The BCM receives an input from any door ajar switch indicating the opening of the door after the OFF Power Mode is achieved.

Note: If the BCM receives a door open/ajar active signal when the vehicle is placed into the OFF Power Mode, the retained accessory power will not initiate.

- The BCM internal timer for the retained accessory power expires after approximately 10 min.

Systems powered by the retained accessory power control circuit during the retained accessory power mode are as follows:

Note: The vehicle may not be equipped with all components as listed below.

- 12 V Accessory Power Receptacle
- Cigarette Lighter Receptacle
- Window Switches
- Sunroof Control Module (If Equipped)
- Sunroof Switch (If Equipped)
- Mobile Device Wireless Charger Module
- Mobile Telephone Control Module (If Equipped)
- Traffic Data Receiver (If Equipped)
- Transmission Shift Lever Position Indicator (w/floor mounted console gear shift)

Serial Data Controlled Retained Accessory Power

Retained accessory power systems controlled by serial data are as follows:

Radio

Radio retained accessory power activation/termination is the same as relay operation with one exception; the only door that will turn the radio off during retained accessory power is the driver door open/ajar switch. The USB Ports will function the same as the radio.

Vehicle Communication Interface Module (VCIM) (Onstar®) (If Equipped)

VCIM RAP activation/termination is the same as radio operation with 1 exception; if there is an active call and the vehicle is placed in the OFF Power Mode, the VCIM will remain in RAP mode, and keep the radio in RAP mode until the call is terminated.

Interruptible Retained Accessory Power

The Power Mode Master (PMM) Controls components as needed If equipped with a RAP relay, the BCM controls the Retained Accessory Power with an exception, Interruptible Retained Accessory Power (IRAP) is deactivated during transmitter authentication. During Transmitter Authentication the PMM will deactivate components including IRAP to prevent Radio Frequency (RF) Interference (RFI) that may cause a “NO REMOTE DETECTED” message to be displayed on the drivers information center.

Note: If transmitter Authentication occurs while in Run or Propulsion Modes, it is normal to for IRAP to be interrupted momentarily (i.e. items connected to auxiliary power ports or chargers may momentarily go off then come back on).

If a remote transmitter was not been previously detected, Transmitter Authentication can occurs under any of the following conditions:

- The drivers side front door is opened.
- The drivers side rear door is opened.
- The S38 Vehicle On/Off Switch is pressed.

Section 8

Roof

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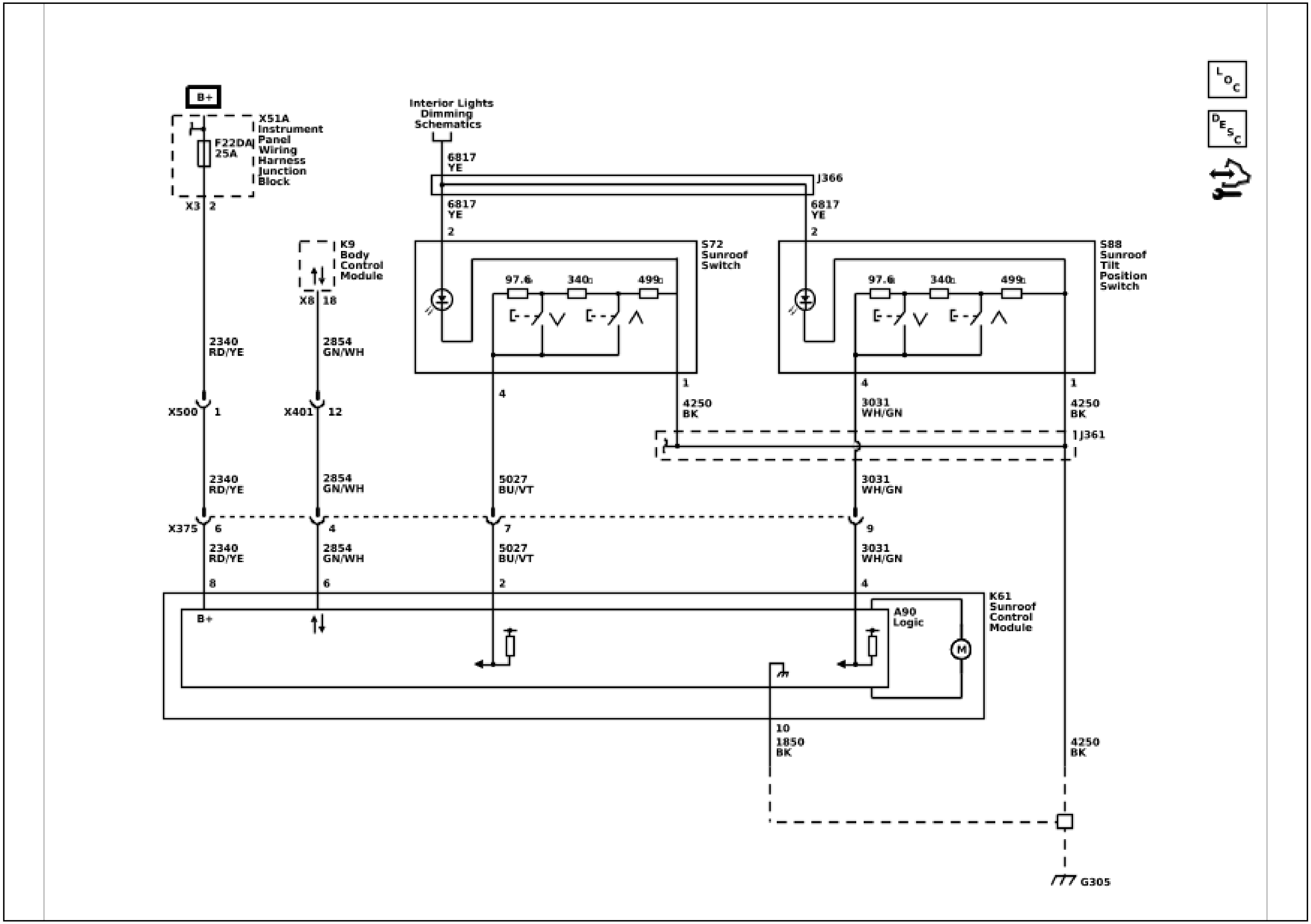
Schematic and Routing Diagrams 8-2
Sunroof Schematics 8-3
Description and Operation 8-4
Sunroof Description and Operation 8-4

Roof

Sunroof

Schematic and Routing Diagrams

Sunroof Schematics (Sunroof (CAC))


LOC
DESC
B+
X51A Instrument Panel Wiring Harness Junction Block
F22DA 25A
X3 2
2340 RD/YE
X500 1
X375 6
8
K9 Body Control Module
X8 18
2854 GN/WH
X401 12
4
6
Interior Lights Dimming Schematics
6817 YE
J366
2
S72 Sunroof Switch
S88 Sunroof Tilt Position Switch
97.6Ω
340Ω
499Ω
1
4250 BK
J361
3031 WH/GN
5027 BU/VT
7
9
K61 Sunroof Control Module
A90 Logic
M
10
1850 BK
G305

6853141

Description and Operation

Sunroof Description and Operation

Note: Not all sunroof systems use an electrically controlled sunshade.

To view the locations of the sunroof system components, refer to *Master Electrical Component List 7-641*

The sunroof system consists of a glass panel, sunshade, sunroof motor/module, sunshade motor/ module or manual sunshade, sunroof slide and/or tilt switches, sunshade switch, and the body control module (BCM). The electrical portion of the system controls the movement of the sunroof and sunshade (if equipped). The BCM communicates with the sunroof and sunshade motor/module to enable or disable sunroof and sunshade operation. The sunroof and sunshade motors/modules provide system status and diagnostic information to the BCM for diagnostic reporting and operational purposes. The sunroof and sunshade are each controlled by the integrated motor/ controller containing the necessary electronics, motor, hall effect position sensors, as well as the interface to the driver control switches. Each motor/controller is capable of controlling motion based on control switch activation and commands from the BCM. The sunroof and sunshade operation is interdependent on some vehicles, in which case they are controlled by the BCM. If the system is overloaded, the power supply is temporarily cut off.

Sunroof and Sunshade Control Switches

The sunroof slide, tilt, and sunshade slide open/close operations are controlled by switches. Some switches may support express open/close operation. Not all vehicles are equipped with all three switches and the behavior of the sunroof for each switch press is vehicle dependent. Some vehicles may have a tilt switch while others may have a vent feature linked to the slide switch. Not all vehicles are equipped with an electrically controlled sunshade, thus lacking the sunshade switch.

System Protection

Normal operation of the sunroof system may be altered when system protection is engaged.

Obstacle or Blockage Detection

Obstacle detection is active when moving in the closing direction and while the sunroof or sunshade opening is approximately 4–200 mm (0.16–7.87 in). When an obstacle is detected in this range, the motion in the closing direction will stop and the sunroof/sunshade will reverse direction for a short distance. The reversal will complete regardless of operating mode. If the travel is outside the range defined above, the sunroof/sunshade motor will continue closing until it detects a motor stall condition or the system is at one of the defined stops.

Motor Stall

If the sunroof or sunshade is moving in the open or close direction and stops moving for 350 ms while a command is active, and no obstacle has been detected, the motor will be turned off to prevent overheating.

Sunroof System Thermal Protection

The sunroof/sunshade controllers have a thermal protection algorithm to protect the sunroof/sunshade controls and motors from damage due to overheating conditions resulting from immoderate switch actuations. The thermal protection algorithm will cause any new sunroof/sunshade open commands to be ignored until the motors cool. A defined number of close requests are allowed during an over temperature condition. If the thermal protection is triggered during an obstacle detection event, the sunroof/sunshade reversal will finish first.

Sunroof and Sunshade Coordination

For vehicles with an electrically controlled sunshade, the BCM will command the sunshade to open to predefined positions based on the requested sunroof position. This interaction may also prohibit the sunshade from closing past these points depending on the sunroof position. Faults on the sunroof or sunshade motor/module circuits will disable the system.

Opening

If the sunroof is opened anywhere between the fully closed and vent position, the BCM will command the sunshade to a minimum open position provided that the sunshade is not opened adequately at the time of the sunroof command. If the sunroof receives an open or express open command beyond vent position, the BCM will command the sunshade to open approximately halfway if the sunshade is not opened adequately. This position corresponds to a point behind the leading edge of a fully opened sunroof glass.

Closing

The sunshade can only be closed completely with the sunshade switch if the sunroof is completely closed. If the sunroof is opened past the vent position, the sunshade will not be allowed to close past the halfway point.

Service Tool Commanded Open

When a service tool commands the sunshade to open, it results in the sunshade moving to the half way position or to the fully open position depending on the calibration. If the half way point is calibrated on, this position is as far as the sunshade can be opened with the service tool. To go beyond this point a switch activation must be used.

Rear Sunshade Operation

If equipped, the rear window sunshade is controlled by a switch with open, close, express open, and express close functionality.

Section 9

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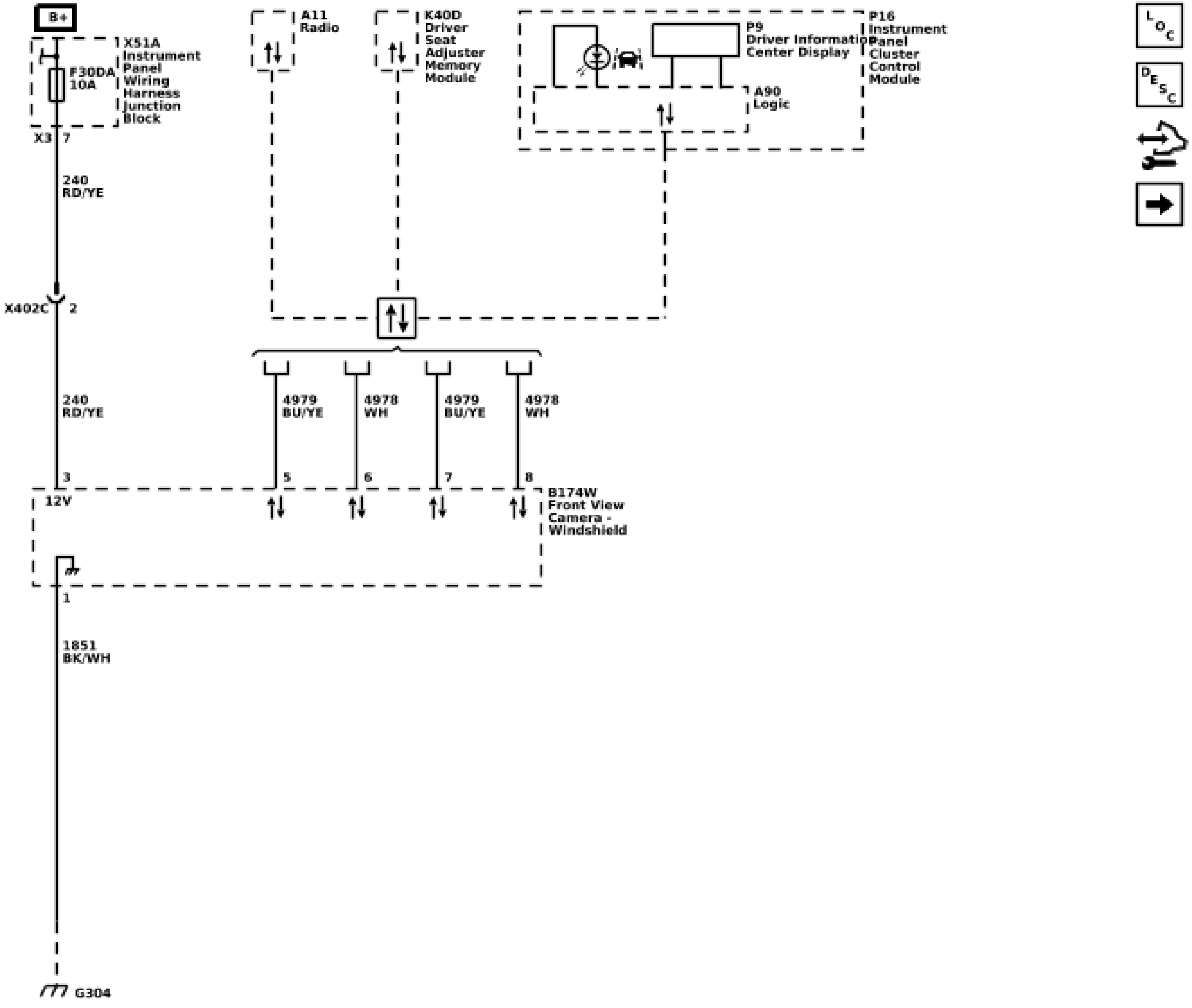
Safety and Security

Driver Assistance Systems

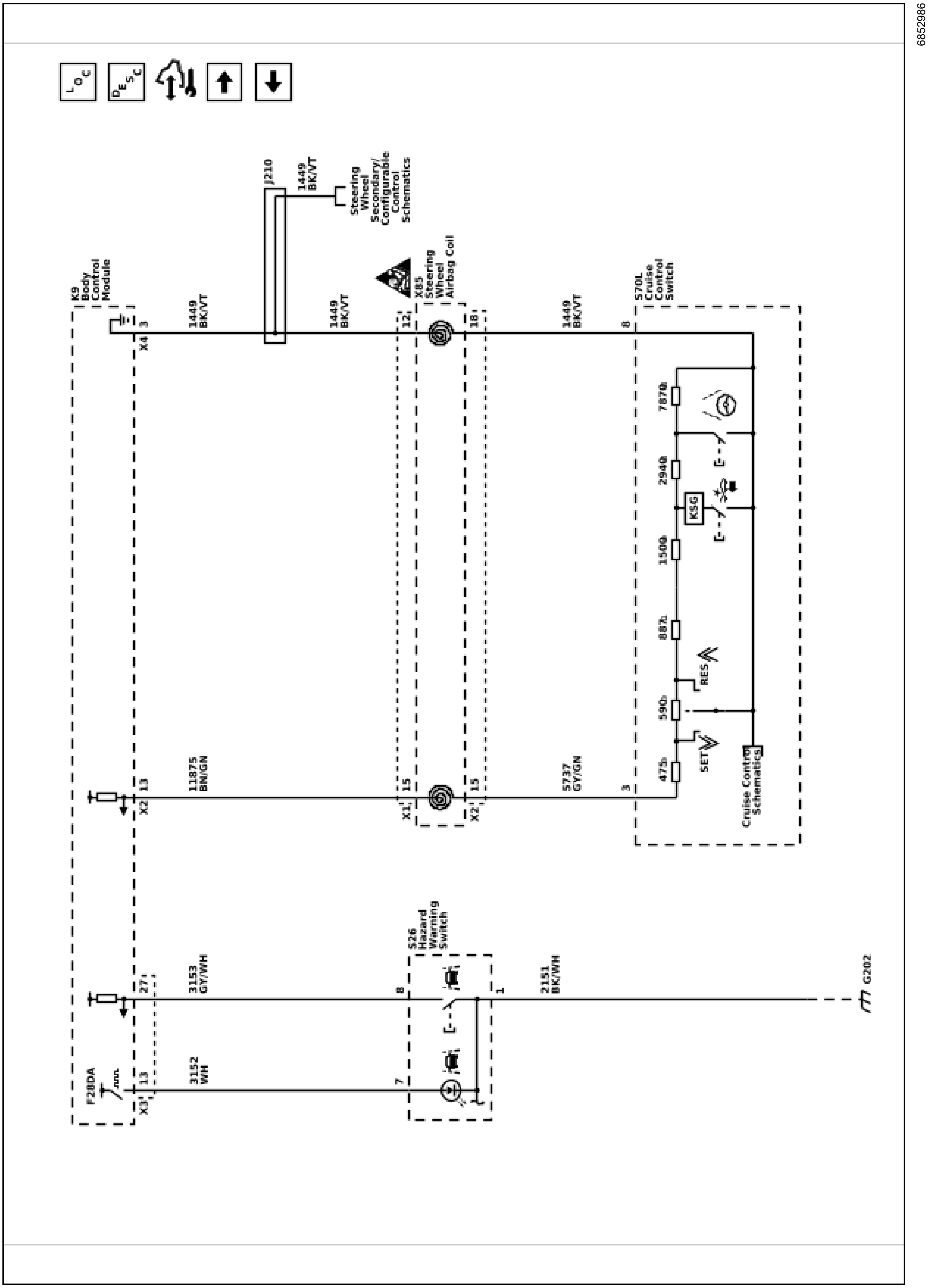
Schematic and Routing Diagrams

Driver Assistance Systems Schematics (Lane Keep Assist and Forward Collision Alert - Module Power, Ground, and Serial Data)

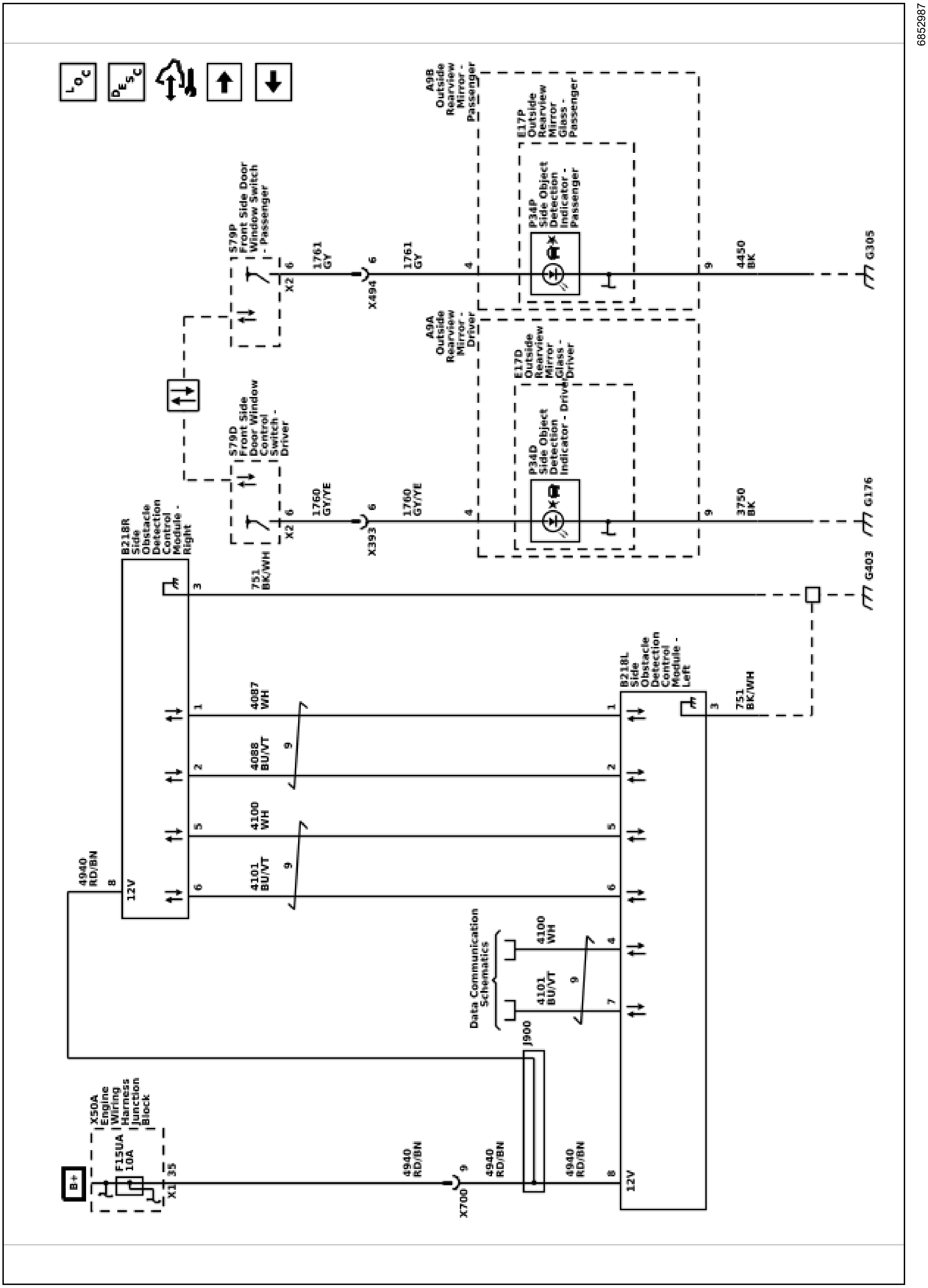

B+
X51A Instrument Panel Wiring Harness Junction Block
F30DA 10A
X3 7
240 RD/YE
X402C 2
240 RD/YE
3
12V
1
1851 BK/WH
G304
A11 Radio
K40D Driver Seat Adjuster Memory Module
P9 Driver Information Center Display
A90 Logic
P16 Instrument Panel Cluster Control Module
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
5
6
7
8
B174W Front View Camera - Windshield

6852985

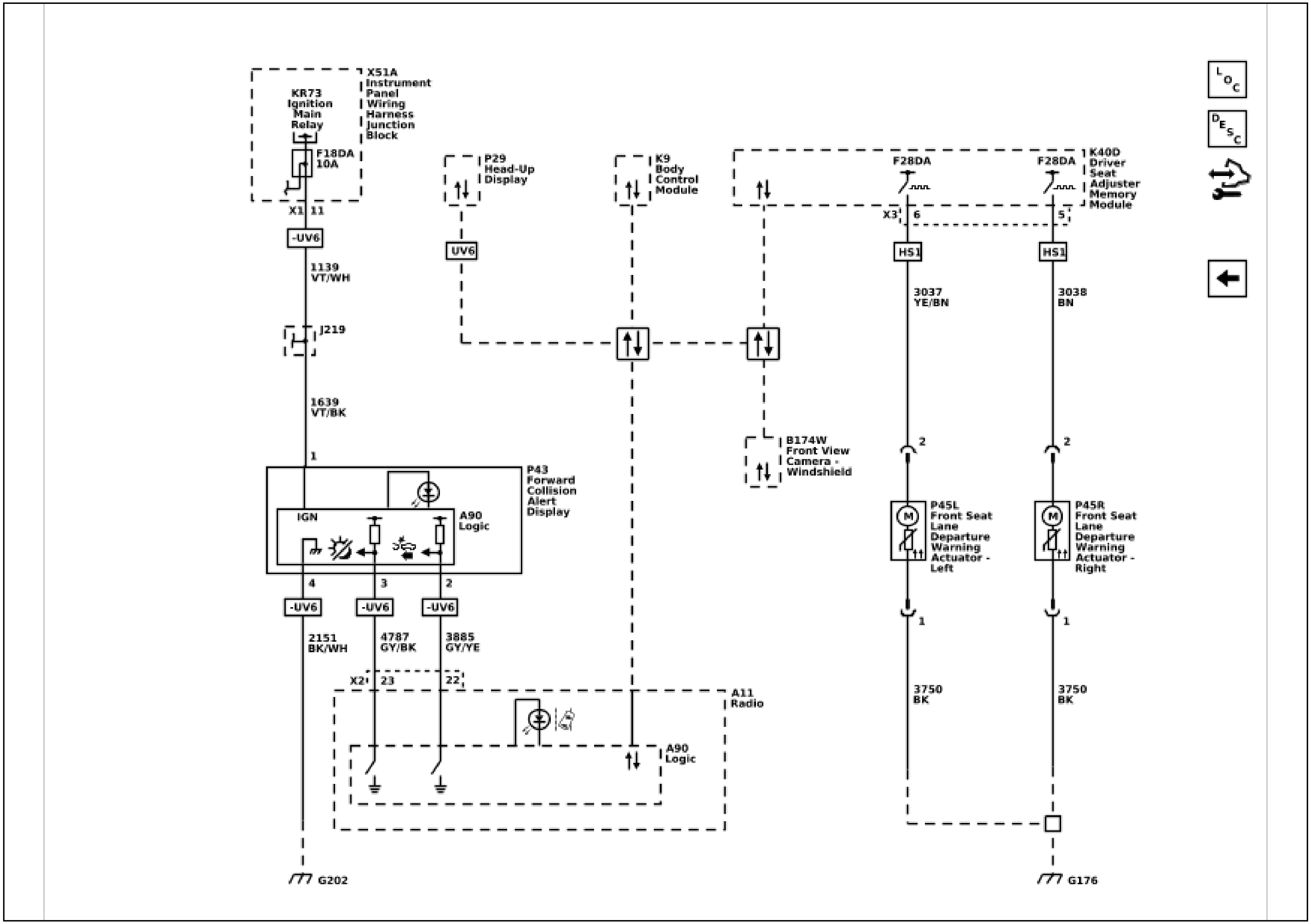
Driver Assistance Systems Schematics (Lane Keep Assist and Forward Collision Alert - Controls)


6852986
K9 Body Control Module
X4 3
1449 BK/VT
J210
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1449 BK/VT
X85 Steering Wheel Airbag Coil
12
18
1449 BK/VT
8
S70L Cruise Control Switch
787Ω
294Ω
KSG
150Ω
88Ω
RES
59Ω
SET
475Ω
Cruise Control Schematics
X2 13
11875 BN/GN
X1 15
X2 15
5737 GY/GN
3
S26 Hazard Warning Switch
27
3153 GY/WH
8
1
2151 BK/WH
G202
F28DA
X3 13
3152 WH
7

Driver Assistance Systems Schematics (Rear Cross Traffic Alert and Side Blind Zone Indicators)


6852987
LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
F15UA 10A
X1 35
4940 RD/BN
X700 9
J900
Data Communication Schematics
4100 WH
4101 BU/VT
9
4
7
8
12V
B218L Side Obstacle Detection Control Module - Left
1
2
5
6
3
751 BK/WH
4087 WH
4088 BU/VT
B218R Side Obstacle Detection Control Module - Right
G403
S79D Front Side Door Window Control Switch - Driver
X2 6
1760 GY/YE
X393 6
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
P34D Side Object Detection Indicator - Driver
3750 BK
G176
S79P Front Side Door Window Switch - Passenger
1761 GY
X494 6
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
P34P Side Object Detection Indicator - Passenger
4450 BK
G305

Driver Assistance Systems Schematics (Collision Alert Indicators)


X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F18DA 10A
X1 11
-UV6
1139 VT/WH
J219
1639 VT/BK
1
P43 Forward Collision Alert Display
IGN
A90 Logic
4
3
2
-UV6
-UV6
-UV6
2151 BK/WH
4787 GY/BK
3885 GY/YE
X2 23
22
G202
P29 Head-Up Display
UV6
K9 Body Control Module
A11 Radio
A90 Logic
B174W Front View Camera - Windshield
K40D Driver Seat Adjuster Memory Module
F28DA
F28DA
X3 6
5
HS1
HS1
3037 YE/BN
3038 BN
2
2
P45L Front Seat Lane Departure Warning Actuator - Left
P45R Front Seat Lane Departure Warning Actuator - Right
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1
3750 BK
3750 BK
G176
6852988

Description and Operation

Forward Collision Alert Description and Operation (without UGN)

Forward Collision Alert (UEU)
The forward collision alert system is a convenience feature of the B174W Front View Camera - Windshield that can warn drivers of a possible front-end collision situation with a vehicle they are following. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting vehicles directly ahead. When a vehicle is detected ahead, a green icon is displayed. This indicator will turn amber if the driver is following too closely. If the system detects that the driver is seconds away from a possible front-end collision, it sends an alert. The P43 Forward Collision Alert Display, which includes a series of red collision alert LEDs, will flash. An audible alert sound will simultaneously sound. If the vehicle is equipped with safety alert seat (HS1), both sides of the seat will pulse. The forward collision alert system can be set to "far," "medium," or "near" timing using the forward collision alert switch and can be turned off using this control or through the vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

Forward Automatic Braking (UHY)
Forward automatic braking detects vehicles ahead in your path that are traveling in the same direction and may help reduce crash severity or avoid the crash altogether by applying the brakes automatically or enhancing the driver’s braking in some emergency front-end collision situations . It can provide braking assist, such as brake system pre-fill, or automatically brake the vehicle if an imminent collision is determined. This can help avoid or lessen the severity of crashes when driving in a forward gear. Depending on the situation, the vehicle may automatically brake moderately or hard. Forward automatic braking can only occur if a vehicle is detected. When a vehicle is detected ahead, a green icon is displayed. The forward automatic braking system works when driving in a forward gear between 8 km/h (5 mph) and 60 km/h (37 mph). It can detect vehicles up to approximately 60 m (197 ft) away.

If the system detects that the driver is seconds away from a possible front-end collision with the vehicle it is following, it will first send an alert. If the driver doesn’t respond quickly or the situation happens suddenly, forward automatic braking enhances the driver’s braking or automatically applies the brakes. Drivers can override automatic braking at any time by pressing the accelerator or by braking. If the system slows a vehicle to a complete stop, the electronic parking brake will apply. The electronic parking brake can be release in typical fashion by pressing the electronic parking brake switch.

Through vehicle personalization, the forward automatic braking can be been set to the ALERT setting or turned completely off. This setting disables most automatic braking. The driver information center will display FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PREP REDUCED. This is normal operation when the forward automatic braking or forward collision alert system is set to OFF or ALERT. This message is not present when the forward automatic braking or forward collision alert system are set to ALERT and BRAKE.

Forward Collision Alert/Forward Automatic Braking Components

- B174W Front View Camera - Windshield
- P16 Instrument Panel Cluster Control Module
- P43 Forward Collision Alert Display (without UV6)
- P29 Head-Up Display (with UV6)
- Forward Collision Alert Switch
- Infotainment System
- Safety Alert Seat (with HS1)

B174W Front View Camera - Windshield
The B174W Front View Camera - Windshield detects vehicles in front of the vehicle. The B174W Front View Camera - Windshield communicates with the P16 Instrument Cluster via serial data to illuminate the appropriate amber or green vehicle ahead indicator or P43 Forward Collision Alert Display. The B174W Front View Camera - Windshield also communicates via serial data with the infotainment system to request audible alerts.

P16 Instrument Panel Cluster Control Module
The P16 Instrument Panel Cluster Control Module communicates via serial data with the B174W Front View Camera - Windshield and will illuminate the amber or green vehicle ahead indicator as requested by the B174W Front View Camera - Windshield. The P16 Instrument Panel Cluster Control Module also controls the P43 Forward Collision Alert Display.

P43 Forward Collision Alert Display (without UV6)
The P43 Forward Collision Alert Display are a series of red LEDs that will flash when approaching another vehicle too rapidly. The P43 Forward Collision Alert Display are located in the upper instrument panel area and reflect off the windshield when illuminated.

The P43 Forward Collision Alert Display receive power and ground and are discretely controlled by the P16 Instrument Cluster through a pair of low control circuits. When requested by the B174W Front View Camera - Windshield, the P16 Instrument Cluster will pulse the low control circuits, flashing the LEDs as a visual alert that another vehicle is being approached too rapidly.

P29 Head-Up Display (with UV6)
The P16 Instrument Cluster controls the P29 Head-Up Display via serial data. The P16 Instrument Cluster will command the P29 Head-Up Display to flash the collision alert indicator as a visual alert when approaching another vehicle too rapidly as requested by the B174W Front View Camera - Windshield.

Forward Collision Alert Switch
The forward collision alert switch provides an input to the B174W Front View Camera - Windshield to select the alert timing sensitivity when approaching another vehicle too rapidly. The forward collision alert switch is part of the S70L Cruise Control Switch and provides inputs to the K9 Body Control Module, which then communicates with the B174W Front View Camera - Windshield via serial data.

The K9 Body Control Module applies voltage and monitors a low signal voltage from the normally open switch. When the switch is pressed, the signal circuit is pulled low through a specific series of resistors, indicating that the system has been requested to change the alert timing sensitivity. The first button press will show the current alert timing setting on the driver information center. With every subsequent button press, the alert timing sensitivity is changed.

Infotainment System
The infotainment system controls the audible alerts for the forward collision alert system. If the vehicle is approaching another vehicle too rapidly, the B174W Front View Camera - Windshield will command the infotainment system issue an audible alert to the driver.

Safety Alert Seat (with HS1)
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle is approaching another vehicle too quickly, the B174W Front View Camera - Windshield will command the control module to pulse both sides of the seat.

Forward Collision Alert and Forward Automatic Braking Operational Checks

If the forward collision alert system is off, inoperative, or not functioning, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization. Vehicle personalization allows the system to be set to “Off,” “Beeps,” ”Alert,” “Safety Alert Seat,” or “Alert & Brake”.
- Attempt to replicate the customer concern. While driving, if the vehicle-ahead telltale display illuminates green when following a vehicle above 8 km/h (5 mph) , forward collision alert is operating properly.

If the driver is receiving false forward collision alerts, check the following:

- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
- The system may be identifying vehicles farther ahead than the customer is expecting. Forward collision alert detects vehicles within a distance of approximately 60 m (197 ft) and operates at speeds above 8 km/h (5 mph).
- Forward collision alert may provide unnecessary alerts to turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

If forward collision alert beeps, but the seat does not vibrate, check the following:

- Verify the vehicle is equipped with safety alert seat (RPO HS1).
- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization: It may be set to “Beeps” or “Alert Only” instead of “Safety Alert Seat” or “Alert & Brake”.

If FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PRE REDUCED is displayed on the driver information center, check the following:

- Verify that the system is enabled through vehicle personalization: It may be set to “Alert Only” instead of ”Off” or Alert & Brake”.

If SERVICE FRONT CAMERA is displayed on the driver information center, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.

- If the message is only displayed upon startup, check the following:
  - Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
  - Verify the vehicle is not parked closed to a wall or the B174W Front View Camera - Windshield is not in an over-temperature condition, such as sitting for long periods in high ambient temperatures and direct sun.
- If the message is displayed beyond startup, check the following:
  - Verify there are no active driver information center messages and that no DTCs are set.

If FRONT CAMERA IS BLOCKED is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.

If SERVICE DRIVER ASSIST is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify there are no active driver information center messages and that no DTCs are set.

Lane Keep Assist Description and Operation

The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield maintains the vehicle location between identified lane markings. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. If the vehicle begins to approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. An integrated function of lane keep assist is lane departure warning. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic (if equipped) alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

Lane Keep Assist System Components

The lane keep assist system is made up of the following components:

- B174W Front View Camera - Windshield
- Driver Information Display
- Multi-axis acceleration sensor (part of the K36 Restraints Control Module)
- Steering wheel angle sensor (part of the K43 Power Steering Control Module)
- K43 Power Steering Control Module
- Lane keep assist switch
- Infotainment system
- Safety alert seat (with HS1)

B174W Front View Camera - Windshield

The B174W Front View Camera - Windshield detects visual queues such as lane markings. When it is determined that the vehicle is approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. Using the multi-axis acceleration sensor and steering wheel angle sensor, the B174W Front View Camera - Windshield determines the vehicles path and compares this to it’s own intended path based on lane markings. The B174W Front View Camera - Windshield will then request the K43 Power Steering Control Module to perform the appropriate steering correction. The B174W Front View Camera - Windshield receives an input via serial data from the lane keep assist switch and controls the lane keep assist switch indicator output.

Driver Information Display

Based on vehicle configuration, the P53 Driver Information Display, P16 Instrument Panel Cluster Control Module, or A105 Instrument Panel Multifunction Human-Machine Interface Control Module contains green and amber lane keep assist indicators. These indicate to the driver the current status of the lane keep assist system and are controlled via serial data by the B174W Front View Camera - Windshield. When the vehicle speed is above the minimum required speed (refer to owner manual) and the system has detected the required lane markings and is ready to assist, the green indicator will be illuminated on the driver information display. If the vehicle has unintentionally left the lane, the amber indicator will flash.

Multi-axis Acceleration Sensor

The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The multi-axis acceleration sensor measures vehicle dynamics signals such as velocity and yaw rate for the purpose of determining the vehicles path. The multi-axis acceleration sensor is an integrated part of the K36 Restraints Control Module.

Steering Wheel Angle Sensor

The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The steering wheel angle sensor measures vehicle dynamics signals such as steering angle for the purpose of determining the vehicles path. The steering wheel angle sensor is an integrated part of the steering gear and K43 Power Steering Control Module.

K43 Power Steering Control Module
The K43 Power Steering Control Module uses a torque sensor to detect driver inputs and relays that information to the B174W Front View Camera - Windshield. The electric power steering is used to maintain lane centering.

Lane Keep Assist Switch
The lane keep assist switch provides an input to the B174W Front View Camera - Windshield via serial data to turn the lane keep assist system on and off. The B174W Front View Camera - Windshield provides a signal voltage to the normally open momentary switch. When the switch is pressed, the signal circuit is pulled to ground, indicating to the B174W Front View Camera - Windshield that the system has been requested to turn ON or OFF. The lane keep assist switch also contains the lane keep assist switch indicator, which is controlled by the B174W Front View Camera - Windshield to indicate the ON and OFF status of the lane keep assist system. When the system has been enabled by the lane keep assist switch, the B174W Front View Camera - Windshield applies ground to the switch indicator via serial data and illuminates the LED. The location of the lane keep assist switch can vary with different vehicles. For the exact location please refer to the vehicle owner’s manual.

Infotainment system
The radio controls the audible alert for the lane keep assist. If the vehicle has unintentionally left the lane, the radio will command three beeps as an audible alert to the driver.

Safety Alert Seat (with HS1)
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle has unintentionally left the lane and the K43 Power Steering Control Module determines the corrective action requires an above threshold amount of effort, three pulses to the left or right side of the seat will be commanded, depending on the lane departure direction.

Lane Keep Assist Operation

Lane keep assist with lane departure warning provides gentle steering wheel input and alerts to help prevent drivers from unintentionally drifting out of their intended lane.

There is two stages of warning/intervention for the driver: The first stage is the steering push back, if the lane keep assist system detects that the vehicle will cross the lane marking despite it is intervening, a second stage warning shall be issued. The second stage warning is a chime or a haptic alert through the safety alert seat (if equipped). If a haptic seat vibration is used as stage 2 warning, the vibration will occur on the side of the seat, where the lane departure occurred.

System operation can be described by the following modes:

- Off State: The system has been turned off by the driver using the lane keep assist switch. The lane keep assist indicator will not be illuminated.
- Not Ready To Assist: The system is enabled and the lane keep assist indicator is illuminated, but not ready to assist when any of the following conditions is true:
    - Vehicle speed is less than required for lane keep assist operation. Refer to Owner’s Manual for operational speed.
    - The system cannot detect lane markings. This may be because there are no lane markings, as on a country road or that the lane markings cannot be determined due to snow, rain, or other driving conditions.
    - The windshield area in front of the camera or the camera lens is blocked by fog, dirt, damage to the windshield or other elements that may prevent the camera from detecting lane markings.
- Ready To Assist: The system is enabled and ready to warn of the unintentional lane crossing. The system is ready to assist when the green lane keep assist indicator is illuminated on the driver information display.

Lane Crossing Alerts
- When one of the following conditions are met, the system will not give alerts:
    - The correct turn signal is activated. An activated turn signal is interpreted as an intentional lane crossing.
    - The operator makes an intentional steering maneuver.
    - The operator makes an intentional accelerating maneuver.
    - The operator makes an intentional braking maneuver.
- Lane crossing alert consists of the following:
    - The amber lane keep assist indicator will flash.

  - “push-back” steering torque input (or nudge) from electric power steering to help prevent a lane departure
  - Three chimes are activated through the radio or three pulses to the left or right side of the active safety seat (if equipped).

Hands On Lane Centering Assist (if equipped)

Hands on Lane Centering Assist operates similar to Lane Keep Assist but provides continuous lateral assistance to help keep the vehicle in the center of the lane while Adaptive Cruise Control is engaged. Hands on Lane Centering Assist utilized the steering wheel touch sensors and driver monitoring camera to ensure the driver actively has their hands on the steering wheel and has eyes on the road.

Hands on Lane Centering Assist must be enabled in infotainment vehicle settings, Adaptive Cruise Control engaged, and road lanes visible by the Front view Camera-Windshield: in order for the Hands on Lane Centering Assist to operate.

System states:

- Standby: (white Hands-On steering wheel icon with white lane keep assist lines) feature not engaged due to possible environmental or driver reasons.
- Active: (green Hands-On steering wheel icon with green lane keep assist lines) feature is active and controlling
- Lane Departure Warning: (amber Hands-On steering wheel icon with flashing amber lane keep assist lines) activated when the vehicle moves outside of a predefined threshold of the lane. The system detects that the vehicle is drifting toward or beyond the lane markings.
- Environmental degrades : (amber Hands-On steering wheel icon with white lane keep assist lines) operation degrades are currently alerting for environmental reasons such as lane line confidence low, exceeds road curvature limit, etc.
- Driver Override: (white Hands-On steering wheel icon with white lane keep assist lines) driver has taken control from Hands On Lane Centering Assist.

If the system senses the driver is not meeting necessary requirements (hands on wheel, eyes on road) driver warnings will escalate and can deactivate Hands On Lane Centering Assist. If this occurs three times, the Hands On Lane Centering Assist will be unavailable for the remainder of the Ignition/Vehicle On cycle.

Safety Alert Seat Description and Operation

The safety alert seat uses pulsing driver seat vibrations to intuitively communicate the direction of a possible crash threat. Two P45 Front Seat Lane Departure Warning Actuators are utilized to create the vibration and are located on the left and right sides of the seat cushion. Utilizing two motors allows the vibration to be localized to the left or right side of the seat, depending on the side of the vehicle generating the alert, or to vibrate both simultaneously.

Note: The following systems may not be available on all vehicles.

The following systems utilize the safety alert seat:

- Lane Departure Warning and Lane Keep Assist – Utilizes left or right-side pulses to alert drivers if they unintentionally drift out of their lane
- Rear Cross Traffic Alert – Utilizes left or right-side pulses to the direction of an approaching vehicle
- Forward Collision Alert – Simultaneously pulses on both sides to warn drivers of a possible collision with the vehicle that they’re following
- Front Pedestrian Braking – Simultaneously pulses on both sides to warn drivers of a possible collision with a pedestrian
- Front Parking Assist, Rear Parking Assist, and Backing Warning (part of the Rear Automatic Braking system) – Simultaneously pulses on both sides to warn drivers of a possible low-speed collision

Safety Alert Seat Components

The active safety seat utilizes the following components:

- K9 Body Control Module (without A45/AUN)
- K40D Driver Seat Adjuster Memory Module (with A45/AUN)
- P45L Front Seat Lane Departure Warning Actuator - Left
- P45R Front Seat Lane Departure Warning Actuator - Right

K9 Body Control Module (without A45/AUN)

The K9 Body Control Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K9 Body Control Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K9 Body Control Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

K40D Driver Seat Adjuster Memory Module (with A45/AUN)
The K40D Driver Seat Adjuster Memory Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K40D Driver Seat Adjuster Memory Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K9 Body Control Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

P45 Front Seat Lane Departure Warning Actuator
The P45 Front Seat Lane Departure Warning Actuator is DC motor located in the driver's seat bottom cushion. Two P45 Front Seat Lane Departure Warning Actuators are used in the seat bottom cushion, positioned on the left and right side. An offset weight is attached to the motor. When activated, the spinning offset weight creates a vibration felt by the driver through the seat cushion.

Each P45 Front Seat Lane Departure Warning Actuator receives a constant chassis ground. The motor is controlled by the K9 Body Control Module or K40D Driver Seat Adjuster Memory Module by providing voltage through a dedicated control circuit. When an alert is required, the control module will apply voltage, activating the P45 Front Seat Lane Departure Warning Actuator

Side Blind Zone Alert Description and Operation

The side blind zone alert system detects and reports “objects of interest" on either side of the vehicle, within a specified “blind spot” zone. The system is designed to alert the driver, with a visual display placed on the side view mirror, to the presence of objects of interest that may not be visible in the inside rearview mirror and outside rear view mirrors. Although this system is intended to help drivers avoid lane change collisions, it does not replace driver vision and therefore should be considered a lane change aid. Even with the side blind zone alert system, the driver must check carefully for objects outside of the reporting zone (e.g., a fast approaching vehicle) before changing lanes. In the event that the system senses a malfunction through its diagnostic routines, the system will be disabled and the driver will be visually notified.

When the system detects a vehicle in the side blind zone while driving forward, an amber warning symbol will light up in the appropriate outside mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Side blind zone alert is active when the vehicle is out of park, or the parking brake is off on manual transmission vehicles, and at speeds up to approximately 140 km/h (87 MPH). If a vehicle is detected in the blind zone, the warning symbols will illuminate on the appropriate side. When the vehicle is started, both outside mirror indicators will briefly illuminate to indicate that the system is operating. The warning symbols will vary brightness based on the ambient light conditions.

Side Blind Zone Alert Components

- B218L Side Obstacle Detection Control Module - Left
- B218R Side Obstacle Detection Control Module - Right
- K9 Body Control Module
- S79D Front Side Door Window Control Switch - Driver
- S79P Front Side Door Window Switch - Passenger
- A9A Outside Rearview Mirror – Driver
- A9B Outside Rearview Mirror – Passenger
- Safety Alert Seat (HS1)

B218 Side Obstacle Detection Control Module
The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right are located on each side of the vehicle behind the rear fascia and are not directly visible from outside the vehicle. The B218 Side Obstacle Detection Control Modules use radar to determine the presence of objects nearby. Both B218 Side Obstacle Detection Control Modules communicates with the vehicle via serial data. The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right also communicate with one another on a private CAN serial data bus. When an object is detected in the side blind zone, the B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9 Body Control Module to illuminate the appropriate side blind zone alert indicator.

K9 Body Control Module
The B218L Side Obstacle Detection Control Module - Left and the B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9 Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request.

S79 Front Side Door Window Control Switch
The B218L Side Obstacle Detection Control Module – Left and the B218R Side Obstacle Detection Control

Module – Right will send a CAN message to the K9 Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request. The S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger will apply voltage to the indicator control circuit to illuminate the appropriate indicator.

A9 Outside Rearview Mirror
The A9A Outside Rearview Mirror – Driver and A9B Outside Rearview Mirror – Passenger each contain an icon that is backlit with high intensity, amber-colored LED's located on the mirror surface. The display brightness adapts to day/night conditions. The P43D Side Object Detection Indicator – Driver and P43P Side Object Detection Indicator – Passenger in the appropriate A9 Outside Rearview Mirror is illuminated if the specific B218 Side Obstacle Detection Control Module detects a vehicle in the side blind zone to inform the driver that there is a vehicle driving in the blind spot zone.

Safety Alert Seat (HS1)
The K40 Seat Memory Control Module (with A45) or K9 Body Control Module (without A45) controls the P45 Front Seat Lane Departure Warning Actuators. The P45 Front Seat Lane Departure Warning Actuators provide haptic alert to the driver. If an object is detected, the system will command pulses to the P45LR Seat Haptic Movement Motor – Driver Left Rear or P45RR Seat Haptic Movement Motor – Driver Right Rear, depending on the location of the object, as an alert to the driver.

Side Blind Zone Alert Operation

When the vehicle is started, both A9 Outside Rearview Mirror indicators will briefly illuminate to indicate that the system is operating. The system is designed to detect objects of interest as small as a 125cc motorcycle with rider. The detection zone starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and 3 m (10 ft) behind the vehicle at a height of 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system may illuminate an indicator due to guardrails, signs, trees, shrubs, and other non-moving objects. This is normal system operation; the vehicle does not need service.

When the system detects a vehicle in the side blind zone or lane change alert area while driving forward, independent if passing a vehicle or being passed, an amber warning symbol will illuminate in the appropriate A9 Outside Rearview Mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Foul weather may affect the operation of the side blind zone and lane change alert systems. Occasional missed alerts can occur under normal circumstances and will increase in wet conditions. The number of missed alerts will increase with increased rainfall or road spray. Heavy rainfall, as well as mud, dirt, snow, ice, or slush build-up on the rear fascia, can completely disable the system.

If the vehicle is towing a trailer or has an object such as a bicycle rack attached to the rear of the vehicle, the side blind zone and lane change alert systems may not function properly and the indicators may illuminate intermittently or remain illuminated all the time.

Lane Change Alert Operation

An integrated function of the side blind zone alert system is lane change alert. Lane change alert supplements the side blind zone alert system by detecting approaching vehicles on either side of the vehicle that may not yet be in the side blind zone alert area. The detection zone for lane change alert starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and up to 70 m (230 ft) behind the vehicle at a height between 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system determines when the indicator will illuminate based on the rate of closure, or approach speed, of an approaching vehicle. As the rate of closure become faster, the indicator will illuminate sooner.

Rear Cross Traffic Alert Operation

Rear cross traffic alert displays a red warning triangle with a left or right pointing arrow on the infotainment display to warn of traffic coming from the left or right. This system detects objects coming from up to 20 m (65 ft) from the left or right side of the vehicle. When an object is detected, either three beeps sound from the left or right or three safety alert seat pulses occur on the left or right side, depending on the direction of the detected vehicle.

Driver Information Center Messages

SIDE BLIND ZONE ALERT OFF or LANE CHANGE ALERT OFF

This message indicates that the system has been disabled through the driver information center. Refer to the vehicle owner’s manual for instructions on how to set personalization options on the driver information center.

SERVICE SIDE DETECTION SYSTEM

This message indicates that the system requires service. When the message is displayed, the indicators will remain illuminated at all times, notifying the driver that the side blind zone system should not be relied upon when changing lanes. Since the sensors are also used for rear cross traffic alert, this feature will also be inoperative.

SIDE DETECTION SYSTEM UNAVAILABLE

This message indicates that the system has been temporarily disabled because the sensor is blocked or can otherwise not accurately detect vehicles or objects. Such instances may be mud, dirt, snow, ice, or slush build-up on the rear fascia, heavy rainfall, excessive road spray, fascia damage or stickers. An over or under-voltage condition or over-temperaure will also cause the message to display.

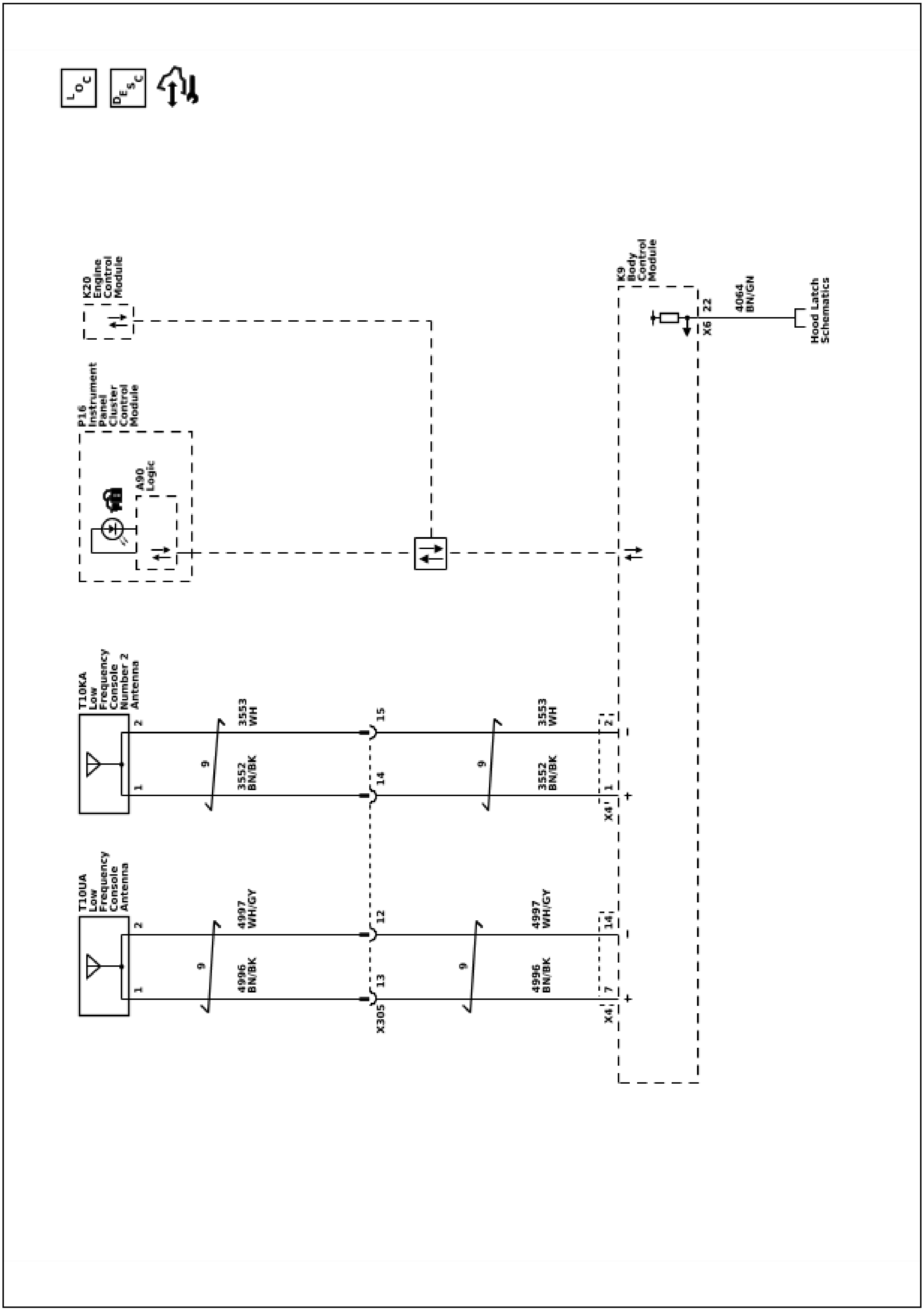
The rear cross traffic alert system will read the GPS latitude and longitude on the serial data bus and calculate if the vehicle is within a Radio Astronomy zone. These zones are located in Europe and Japan and require the sensors to be turned off. The “Side Detection System Unavailable” message will be displayed to the driver when this occurs.

The system is continuously fine tuning the radar alignment. If the B218 Side Obstacle Detection Control Module is removed or significantly disturbed, such as removing the rear fascia or sensor bracket, an initial alignment is automatically performed by the system to enable system operation. However, the SIDE DETECTION SYSTEM UNAVAILABLE may remain for several hours of driving as the system fine tunes the radar alignment to ensure satisfactory alert performance.

Immobilizer

Schematic and Routing Diagrams

Immobilizer Schematics (Immobilizer)


K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
K9 Body Control Module
X6
22
4064 BN/GN
Hood Latch Schematics
T10KA Low Frequency Console Number 2 Antenna
T10UA Low Frequency Console Antenna
2
1
3553 WH
3552 BN/BK
4997 WH/GY
4996 BN/BK
9
15
14
12
13
X305
X4
2
1
14
7
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Repair Instructions

Immobilizer System Component Programming

This procedure will learn the immobilizer function. If the battery voltage is low, charge the battery before proceeding with the learn. If the body control module (BCM) or engine control module (ECM) have been replaced, they must be programmed before performing this learn procedure.

Depending on the immobilizer function being learned or the component replaced, different learn functions are required to be performed. These learn functions are as follows:

Immobilizer System Component Programming

When the function should be used:	Function name on SPS tool:	Function description:	Notes:
The BCM has been replaced and the existing vehicle keys are being reused or a diagnostic has instructed to perform the learn	Body Control Module IMMO Function with Existing Transponder or Remote Key	The BCM will relearn the immobilizer passwords and data while reusing the existing vehicle keys	—
The BCM has been replaced and new vehicle keys are being reused	Body Control Module IMMO Function with New Transponder or Remote Key	The BCM will relearn the immobilizer passwords and data while using new vehicle keys	—
The ECM has been replaced or a diagnostic has instructed to perform the learn	Engine Control Module IMMO Learn	The ECM will relearn the immobilizer passwords and data	—
Both the ECM and BCM have been replaced (this selection will REQUIRE new vehicle keys be used)	Engine Control Module and Body Control Module IMMO Learn	The ECM and BCM will learn new immobilizer passwords and data	Because both the ECM and BCM have been replaced and are learning new immobilizer passwords and data, all vehicle keys must also be replaced
A new vehicle key is being added (does not affect other vehicle keys)	Program Transponder or Remote Key (Add)	A new vehicle key will learn the immobilizer passwords and data	This function may not be available in all sales regions
All vehicle keys are desired to be invalidated and certain keys relearned or a diagnostic has instructed to perform the learn	Program Transponder or Remote Key (Delete)	All existing vehicle keys will be invalidated and any desired keys are relearned	This procedure may be used if a customer has had their keys lost or stolen and wishes to invalidate the keys, making them unable to start the vehicle

Note: To prevent errors or immobilizer learn failure, the vehicle must be in Park (for automatic transmission) or Neutral with park brake applied (for manual transmission).

1. Connect a scan tool to the vehicle and access SPS.
2. Turn ON the ignition, with the engine OFF.
3. Ensure that all power consuming devices are turned OFF on the vehicle.
4. Select SPS application and follow the on-screen instructions.
5. Select Reprogram ECU.
6. Select IMMO Immobilizer Learn.
7. Select the appropriate programming function based on the component that was replaced or is being programmed. Refer to the table at the top of this document for assistance in choosing the correct programming function.

Note:

- At multiple times during the learn procedure, SPS will instruct you to turn the ignition to the run position. Make sure the vehicle is actually in the run mode before continuing on the SPS terminal. If the ignition is not in run mode, the learn procedure will fail. To verify the vehicle is in Run mode, verify the green LED is illuminated on the ignition mode switch.
- For the transmitter pocket location refer to [Link target (target-id 346024-) not found]

8. Follow the on-screen instructions.
9. When the SPS procedure has completed, press and hold the ignition mode switch for 15 seconds.
10. With a scan tool, clear any DTCs.

Unable to Complete Programming

When attempting to program immobilizer components, various conditions may prevent the programming operation from completing. These conditions may be caused by normal system operation, a system malfunction, or an external influence. Common symptoms of a incomplete programming is receiving an error message during the attempt or having the SPS application become unresponsive.

- DTCs are set in the body control module (BCM)

  The immobilizer system is a function of the BCM software. If immobilizer DTCs are set in the BCM, such as DTC B2955, a fault has been identified in the immobilizer system. If this is not corrected before attempting to program components, the programming may not complete. Correct all immobilizer DTCs before attempting to program any immobilizer components.
- The key has been programmed to another vehicle or is not the correct type for the vehicle

  A key can only be programmed to a single vehicle. Once a key is programming to a vehicle, it is paired for the life of the key. The key can be learned to the same vehicle again and again, but it is not able to be programmed to a different vehicle.

  Many vehicle are available with both a base keyless entry system and an optional passive entry system. These keys typically look identical but cannot be substituted for one another. To verify the key is correct, compare the part number that is etched on the key to the part number identified in the parts catalog. The key should be correct for the system installed in the vehicle.
- The theft deterrent module is not properly secured or the key is not properly positioned in the pocket/slot.

  A theft deterrent module that is not fully seated or is otherwise not properly secured may prevent a coupling between the transponder located in the key and the theft deterrent module. Being out of place by as little as 1 mm may prevent programming from completing. Make sure the theft deterrent module is properly installed and fully seated in it’s clip.

  The key shank must be fully extended so that the entire key shank fits into the programming slot.

  To determine if the theft deterrent module is properly secured, remove the battery from the key and place the key into the pocket/slot. Attempt to change the vehicle mode by pressing the vehicle ON/OFF switch. The vehicle should change modes. If the NO REMOTE DETECTED message is displayed on the DIC, the theft deterrent module may not be properly secured.
- External interference is interrupting the programming operation

  External RF interference and EMI may interrupt the low frequency coupling between the key and theft deterrent module. This interference may come from many different locations. Devices plugged into the vehicle power outlets such as cell phone chargers, laptop computers, GPS devices, etc. may cause interference. Vehicle location may also cause interference. Locations near airports and military installations may causer interference. Remove all customer installed devices and, if necessary, move the vehicle if interference is suspected.

Description and Operation

Immobilizer Description and Operation

The immobilizer system functions are provided by the Steering Column Lock Module, the Body Control Module (BCM), and the Engine Control Module (ECM), as well as any control modules which store and report the environment identifier. The Body Control Module uses low frequency antennas in different locations on the vehicle to determine the location of the transmitter. Multiple transmitting antennas are used to ensure complete coverage of the vehicle interior and rear compartment. These antennas transmit to the keyless entry transmitter.

When the vehicle Stop/Start switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message. The BCM then compares this value to a value stored in memory. The BCM also monitors various control modules to determine if the stored environment identifiers match.

If the correct transponder is detected, the electric steering column is unlocked, and there is no start disable from OnStar the BCM will send the prerelease allowed message via serial data to the ECM. The vehicle will be allowed up to 3 seconds run time. If the theft check is incorrect, the environment identifier check fails, the incorrect transponder is detected, the electric steering column is locked, or there is a start disable from OnStar, the BCM will send a negative response and the ECM will not start the vehicle or will immediately shut off the vehicle if prerelease allowed the vehicle to start.

If RF communication is interrupted, a "No Remote Detected" message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket. The immobilizer coil antenna is located in the immediate vicinity of the transmitter pocket. Placing the transmitter in the pocket/slot will create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

The components of the immobilizer system are as follows:

- BCM
- ECM
- Steering column lock control module
- Immobilizer coil antenna
- Low frequency antenna
- Ignition key/Keyless entry transmitter
- Security indicator
- Various control modules which store and report the environment identifier

Body Control Module (BCM)

The immobilizer system is an integral part of the BCM and is controlled internally within the BCM. The BCM can learn up to 8 keys (transponder values). The BCM uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antennas are used to ensure complete coverage of the vehicle interior and rear compartment. The BCM monitors the ignition mode switch. When the ignition mode is changed, the BCM will command, or “ping”, the low frequency antenna.

The BCM uses the following inputs:

- Environment identifier exchange with various modules
- Encrypted code from the vehicle key, received by the immobilizer coil antenna if the keyless entry transmitter signal isn’t detected as indicated by the “No Remote Detected” message
- Encrypted code from the vehicle key

The BCM uses the following outputs:

- Prerelease Allowed signal communication with ECM
- Challenge/Response with ECM

When a transponder value is received by the BCM, the BCM will compare this value to the learned key code stored in memory. The BCM then performs one of the following functions:

- If the encrypted code value matches the values stored in the BCM memory, the BCM will send the Prerelease Allowed signal to the ECM via serial data.
- If the encrypted code unique value does not match the value stored in the BCM, the BCM will send the start disable message to the ECM via serial data.
- If the BCM is unable to receive the vehicle key encrypted code value, the BCM will not send any messages to the ECM.

Engine Control Module (ECM)

The ECM receives the BCM Prerelease Allowed signal and simultaneously the ECM sends a challenge to the BCM via the serial data circuit upon seeing the vehicle transition from OFF to any other power mode. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

Low Frequency Antenna

When commanded, or “pinged”, the low frequency antenna broadcast a challenge to the keyless entry transmitter. Because of the low power of the antenna, this challenge is only broadcast in an approximate three meter range of the antenna. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment.

Steering Column Lock Control Module

On vehicles with electronic steering column lock that use a steering column lock control module the immobilizer system will prevent vehicle starting if there is a fault or no communication with the steering column lock control module.

Keyless Entry Transmitter

Each keyless entry transmitter contains a transponder with a unique encrypted value. The transponder's encrypted value is fixed and unable to be changed. The immobilizer system uses the keyless entry transmitter transponder value to determine if a valid keyless entry transmitter is being used to start the vehicle.

Security Indicator

The BCM will command the Instrument Cluster to illuminate the security indicator when the vehicle is ON to indicate a fault has occurred within the immobilizer system.

Remote Vehicle Speed Limiting Description and Operation

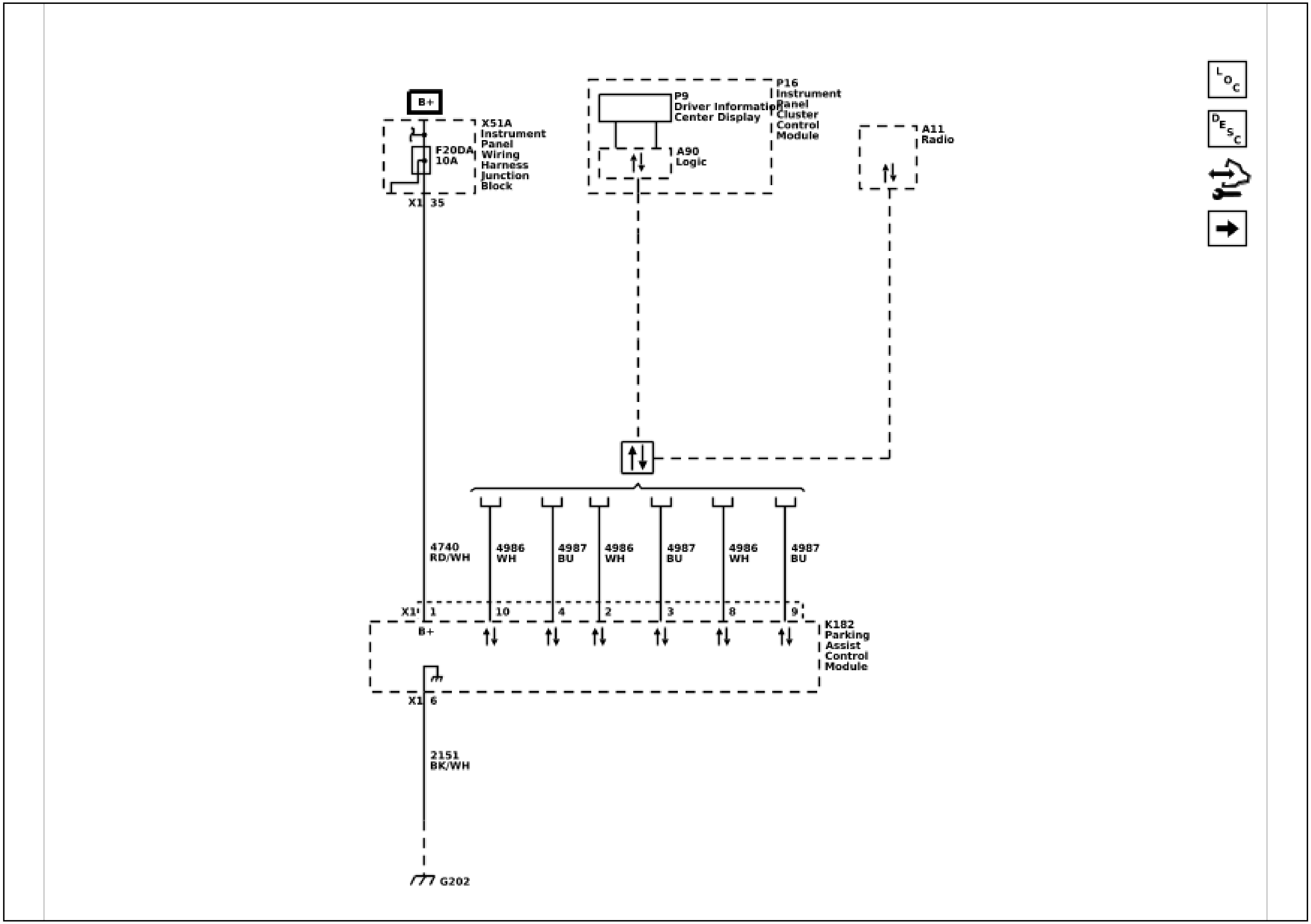
Certain vehicles equipped with OnStar® now have an additional feature that allows for remote limiting of the vehicle's speed. This OnStar® feature is called Stolen Vehicle Slow-Down and is now part of the OnStar® Stolen Vehicle Assistance service. This feature, when used in conjunction with local law enforcement and strict guidelines at the OnStar® Call Center, will slow the vehicle by interacting with the engine control system.

When the engine control system receives a valid request from the OnStar® telematics communications interface module, it will enter into a reduced engine power/vehicle speed limiting mode, which will decelerate the vehicle. Once the request is active the engine control module begins reducing engine torque to match requested vehicle speed and a REDUCED ENGINE POWER indication is displayed. No DTCs will be set during this process.

Parking Assistance Systems

Schematic and Routing Diagrams

Parking Assistance Systems Schematics (Park Assist - Power, Ground, and Serial Data)


B+
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
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10A
X1 35
P9
Driver Information
Center Display
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Panel
Cluster
Control
Module
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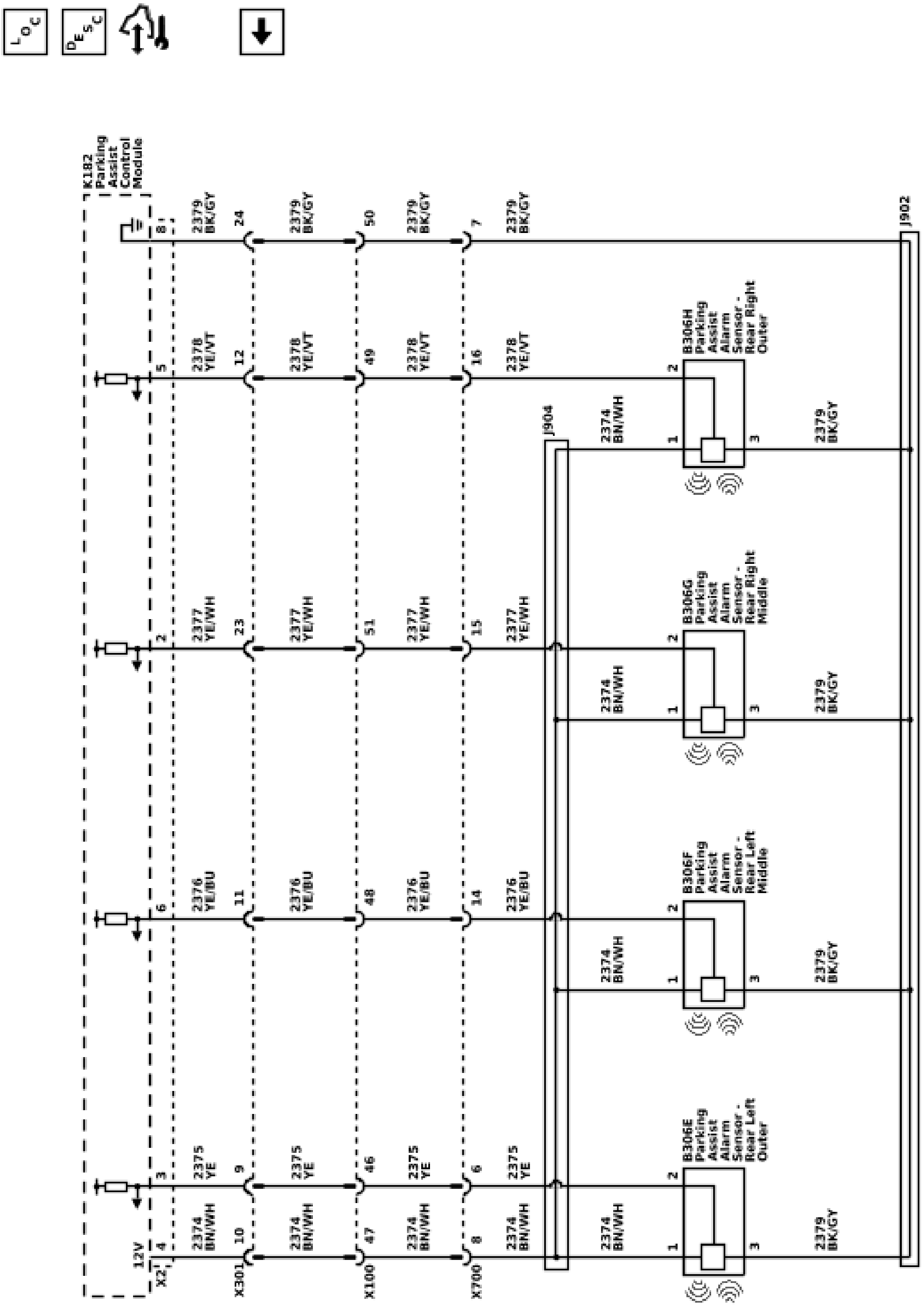
Logic
A11
Radio
4740
RD/WH
4986
WH
4987
BU
4986
WH
4987
BU
4986
WH
4987
BU
X1 1
10
4
2
3
8
9
B+
K182
Parking
Assist
Control
Module
X1 6
2151
BK/WH
G202

6853079

Parking Assistance Systems Schematics (Park Assist - Rear Sensors)


6853080
K182 Parking Assist Control Module
X2
12V
4
3
6
2
5
8
2374 BN/WH
2375 YE
2376 YE/BU
2377 YE/WH
2378 YE/VT
2379 BK/GY
X301
10
9
11
23
12
24
X100
47
46
48
51
49
50
X700
8
6
14
15
16
7
J904
J902
B306E Parking Assist Alarm Sensor - Rear Left Outer
B306F Parking Assist Alarm Sensor - Rear Left Middle
B306G Parking Assist Alarm Sensor - Rear Right Middle
B306H Parking Assist Alarm Sensor - Rear Right Outer
1
2
3

Description and Operation

Parking Assist Description and Operation (UD5)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle’s throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- Infotainment system

K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

B166/B306 Parking Assist Alarm Sensors

The B166/B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

Infotainment System

The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

Rear Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

Parking Assist System Messages

SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
    - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
    - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
    - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
    - One or more of the sensors may be scratched or the paint maybe chipped.
    - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Parking Assist Description and Operation (UD7)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle’s throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Safety Alert Seat (with HS1)
- Infotainment system

K182 Parking Assist Control Module
The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

B306 Parking Assist Alarm Sensors
The B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

K9 Body Control Module
The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

Parking Assist Switch
The parking assist system can be activated and deactivated by pressing the parking assist switch. TheK9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

Parking Assist Switch Indicator
When the parking assist system is enabled, the K9 Body Control Module will illuminate the indicator on the switch. The indicator receives a constant ground and is controlled through a PWM voltage control circuit by the K9 Body Control Module.

Safety Alert Seat (with HS1, without A45)
The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Safety Alert Seat (with HS1 and A45)
The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Infotainment System
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

Rear Parking Assist Operation

The rear parking assist system uses four B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

Parking Assist System Messages

SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

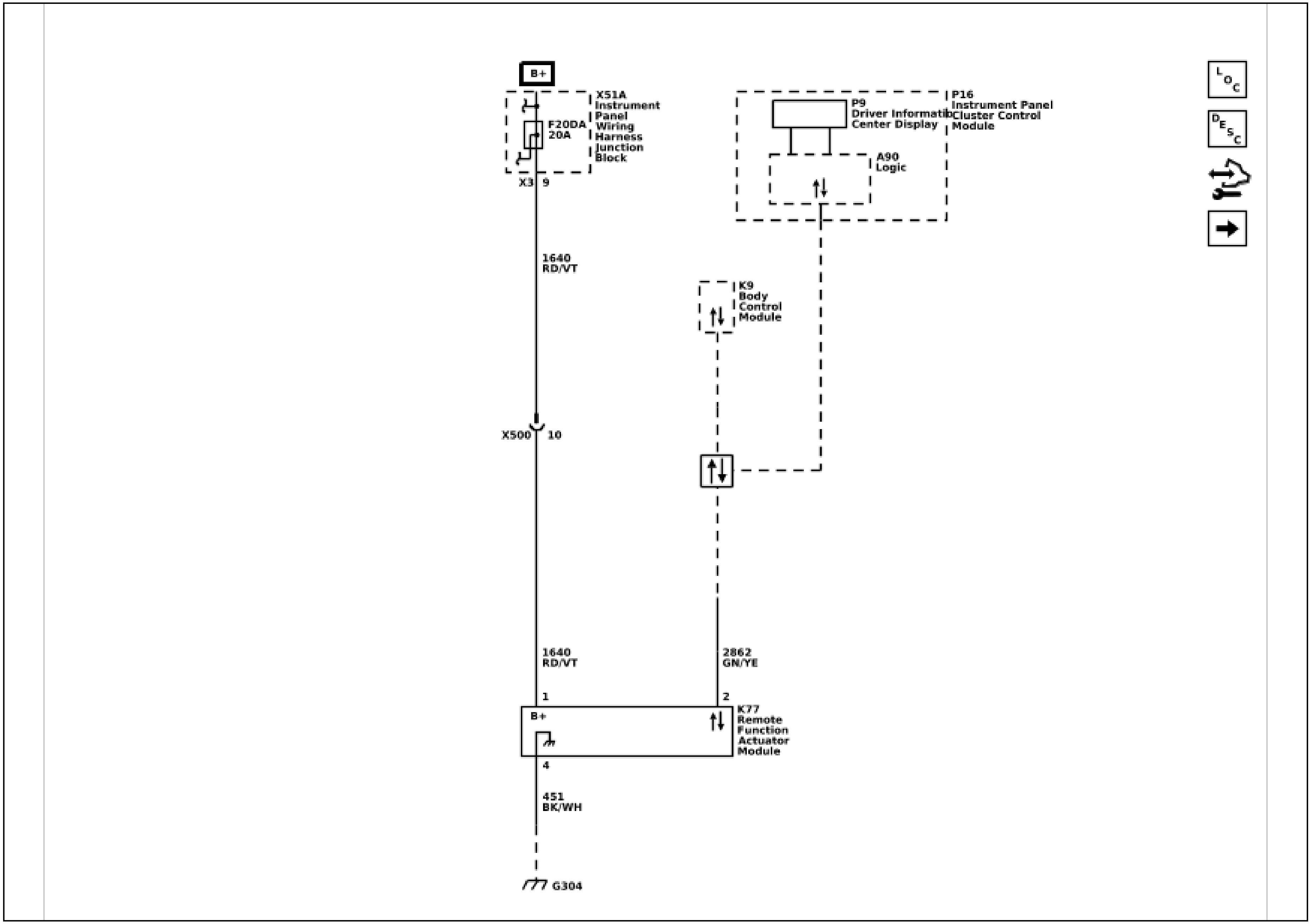
- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.

- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Remote Functions

Schematic and Routing Diagrams

Remote Function Schematics (Keyless Entry - Active)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X51A
Instrument
Panel
Wiring
Harness
Junction
Block
F20DA
20A
X3
9
1640
RD/VT
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1640
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B+
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P9
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Center Display
P16
Instrument Panel
Cluster Control
Module
A90
Logic
K9
Body
Control
Module
2862
GN/YE
2
K77
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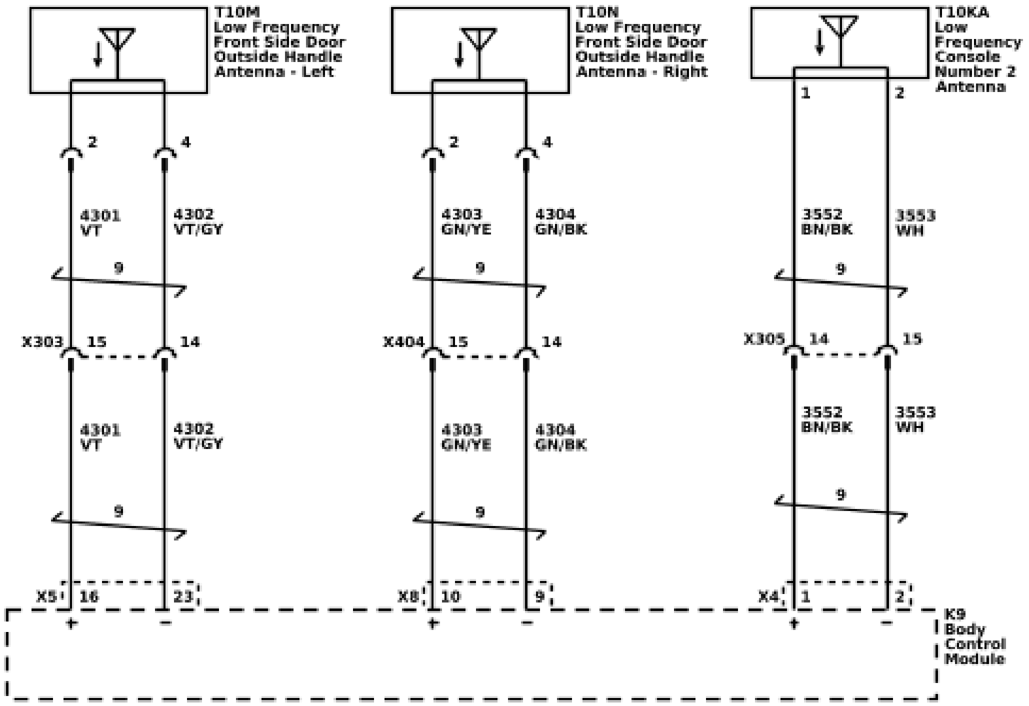
Function
Actuator
Module
L O C
D E S C

6853126

Remote Function Schematics (Keyless Entry - Passive and Keyless Start)


T10M
Low Frequency
Front Side Door
Outside Handle
Antenna - Left
2
4
4301
VT
4302
VT/GY
9
X303
15
14
4301
VT
4302
VT/GY
9
X5
16
23
+
−
T10N
Low Frequency
Front Side Door
Outside Handle
Antenna - Right
2
4
4303
GN/YE
4304
GN/BK
9
X404
15
14
4303
GN/YE
4304
GN/BK
9
X8
10
9
+
−
T10KA
Low
Frequency
Console
Number 2
Antenna
1
2
3552
BN/BK
3553
WH
9
X305
14
15
3552
BN/BK
3553
WH
9
X4
1
2
+
−
K9
Body
Control
Module

6853127

Description and Operation

Front Side Door Access Control Transmitter Description and Operation

Front Side Door Access Control Transmitter Description and Operation

The Front Side Door Access Control Transmitter is an accessory offered to be used as a vehicle entry device. Similar to the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter will send a radio frequency signal to the Remote Function Actuator. Next, the Remote Function Actuator sends a signal to the Body Control Module via LIN communication. The BCM will interpret this signal and either lock or unlock the vehicle as a result. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction.

Like the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter is programmed to the vehicle’s Body Control Module. This means the Front Side Door Access Control Transmitter will populate one of the 8 programmable spaces in the BCM for Keyless Entry Transmitters. The Front Side Door Access Control Transmitter will need to be reprogrammed in the event of BCM replacement. This can only be achieved with the Master Code. If the Master Code is not retrievable, a new Front Side Door Access Control Transmitter with accompanying wallet card will need to be programmed to the new BCM.

The Front Side Door Access Control Transmitter has 5 buttons depicting numbers from 0 to 9. Each button represents a character of a 5 digit code that the vehicle owner may program, which will be referred to as a personal code. The user has 3 attempts to input the correct access code before the Front Side Door Access Control Transmitter enters lockout mode for 1 minute. This will occur up to 2 more times if the incorrect access code is entered repeatedly. After that, any additional 3 attempts will cause the Front Side Door Access Control Transmitter to enter lockout mode for 23 minutes. There is an LED light at the top of the Front Side Door Access Control Transmitter that provides feedback to the user. Each Front Side Door Access Control Transmitter is sold with a wallet card that contains a master code that may be used for keyless entry as well as programming a personal code. The master code will always allow operation of the Front Side Door Access Control Transmitter and may be used to program a new personal code. Entering the 5 digit access code will unlock the driver door. Pressing the 3/4 key within 5 seconds of entering the 5 digit access code with unlock all doors. Pressing the 7/8 and 9/0 button will lock all doors. To change the personal code, refer to the wallet card included with the Front Side Door Access Control Transmitter.

The Front Side Door Access Control Transmitter contains a button cell battery that is not serviceable. Once the battery exceeds the expected lifetime, the Front Side Door Access Control Transmitter will need to be replaced. A new Front Side Door Access Control Transmitter will come with new wallet card.

Keyless Entry System Description and Operation

Keyless Entry System Description and Operation – Active

The keyless entry system is a vehicle entry device. The keyless entry system is used in conjunction with the door locks to unlock the vehicle. Keyless entry will lock/unlock a door or open the rear compartment lid when a corresponding button on the keyless entry transmitter is pressed. This is accomplished by the transmitter sending a radio frequency to the remote control door lock receiver that has a direct link to the body control module (BCM). The BCM interprets the signal and activates the requested function or requests the appropriate ECU to activate the function via a serial data message. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction. Keyless entry allows you to operate the following features:

- Door lock/unlock

- Rear compartment lid release
- Illuminated entry lamps
- Panic alarm/vehicle locator
- Remote vehicle start
- Passive keyless entry able/disable
- Automatic window express down, if equipped
- Automatic window express up, if equipped
- Automatic power mirror folding/unfolding, if equipped

Keyless Entry System Description and Operation – Passive

Passive keyless entry allows entry to a locked vehicle without pressing any buttons on the keyless entry transmitter. The passive entry system uses low frequency antennas in several different areas on the vehicle to determine the location of the transmitter. When passively opening a locked door or the rear compartment, you must have a programmed transmitter with you in your pocket, purse, or briefcase within a one meter range.

When an exterior door handle button is pressed or the rear compartment touch pad is pressed, the body control module activates the low frequency antenna which sends out a challenge to the keyless entry transmitter. Because of the low frequency, communication range is limited. The antenna will emit the challenge in a one meter range. The transmitter must be within this range to receive the challenge. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, entry into the vehicle will be allowed.

As a customer convenience feature, the keyless entry system will notify the driver if the transmitter has been left in the vehicle after exiting by chirping the vehicle horn three times and displaying a message on the DIC. This may be turned off using vehicle personalization. Also, if the transmitter is left in the vehicle after the central door lock switch has been used to lock the vehicle, the driver door will remain unlocked after exiting the vehicle. This is intended to prevent locking the transmitter in the vehicle and being unable to access it.

Keyless Entry System Description and Operation – Keyless Start

The keyless start portion of the keyless entry system allows vehicle starting, having only the transmitter as your key. The keyless start system uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment. When using the keyless start system, a programmed transmitter must be in the vehicle's interior, in the driver's pocket, purse, or briefcase.

When the ignition mode switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, vehicle starting will be allowed. If RF communication is interrupted, a “No Remote Detected” message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket located in the center console. The immobilizer antenna coil is located directly beneath the transmitter pocket. Placing the transmitter in the pocket will create a low powered coupling between the transmitter and immobilizer antenna, allowing communications to occur and enabling vehicle starting. If the key has been idle the DIC may display “Key In Sleep Mode, Move Key, Then Start”. In this case move the vehicle key to start the vehicle.

The keyless entry system has the following components:

- Keyless entry integrated key/transmitter
- Driver and passenger side antennas
- Driver and passenger door handle switches (part of the door handle assembly)
- Rear fascia antenna
- Immobilizer antenna coil (front console antenna function)
- Rear console antenna
- Rear Compartment Antenna (If Equipped)
- Body control module (BCM)
- Remote control door lock receiver

Keyless Entry Transmitters

By operating any of the exterior door handle buttons or the start/stop switch, a nearby transmitter is challenged by a keyless entry antenna. The transmitter will send an RF response to the remote control door lock receiver, which communicates with the BCM. The BCM will interpret this communication and either allow or deny vehicle entry or starting.

Side Antennas

The keyless entry side antennas are used to transmit low frequency communications to the keyless entry transmitters.

The keyless entry side antennas are located in the driver and passenger body sides. The antennas are controlled by the body control module. When the exterior door handle button is pressed, the respective antenna will send out a challenge to the keyless entry transmitter, which begins the passive entry communications.

Rear Fascia Antenna

The rear fascia antenna is used to transmit low frequency communication to the keyless entry transmitters for entry to rear compartment.

The rear fascia antenna is located behind the rear fascia. The antenna is controlled by the body control module. When the rear compartment touch pad is pressed, the antenna sends out a challenge to the keyless entry transmitter, which begins the passive entry communications.

Immobilizer Coil Antenna

This antenna is located in the front of the center console.

The Immobilizer antenna coil is used for vehicle starting functions and for learning vehicle keys. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur. If the transmitter battery is dead, weak, or the RF signal is being interrupted, the transmitter may be placed in the pocket to create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

Rear Console Antenna

This antenna is located in the rear of the center console.

The rear console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

Rear Compartment Antenna (If Equipped)

This antenna is located near the center of the rear compartment area.

The rear compartment antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

OnStar® Remote Link

A vehicle operator may have the ability to perform some of the keyless entry functions using applications on personal devices such as smart phones. Refer to *OnStar Description and Operation 4-12*.

Body Control Module (BCM)

The BCM is a multi-function module that performs the following functions:

- Receive and authenticate active transmitter and keyless start/entry signals from the remote control door lock receiver
- Determines the function requested by the transmitter signal
- Performs the function requested by the transmitter signal
- Activating vehicle antennas for passive keyless entry functions
- Activating vehicle antennas for keyless start functions
- Backup control for the ECM accessory wakeup and the run/crank relay
- If equipped, controls the electronic steering column lock
- Receiver of the exterior door handle switch inputs and door open switch (not the door ajar switch)
- Ignition mode switch monitoring

Unlock Driver Door Only – Active

Momentarily press the transmitter UNLOCK button in order to perform the following functions:

- Unlock only the driver door or all doors, if enabled through personalization
- Illuminate the interior lamps for a determined length of time, or until the ignition is turned ON
- Flash the exterior lights, if enabled through personalization
- Disarm the Content Theft Deterrent (CTD) system
- Deactivate the CTD system when in the alarm mode

Unlock All Doors – Second Operation – Active

Momentarily press the transmitter UNLOCK button a second time, within 5 seconds of the first press, to perform the following function:

Unlock the remaining doors

Unlock Driver Door Only – Passive

If enabled through personalization, approach the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock and open only the driver door
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

Unlock All Doors – Passive

Approach any non driver door (front or rear) or, if enabled through personalization, the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock all vehicle doors
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

Lock All Doors – Active

Press the transmitter LOCK button to perform the following functions:

- Lock all vehicle doors
- Immediately turn off the interior lamps
- Flash the exterior lights, if enabled through personalization
- Chirp the horn, if enabled through personalization
- Arm the CTD system

Lock All Doors – Passive

Exit the vehicle (with ignition off) with the keyless entry transmitter to automatically perform the following functions, if equipped.

- Lock all vehicle doors after a delay
- Flash the exterior lights, if enabled through personalization
- Chirp horn, if enabled through personalization
- Arm the CTD system

When all doors are closed, they can also be locked from the exterior by operating a front door handle button or touch pad while having a valid transmitter within range. Vehicles equipped with a rear door button can also lock all doors from the rear doors.

Rear Compartment Lid Release – Active (If Equipped)

If the vehicle transaxle is in PARK or NEUTRAL, a double press of the transmitter rear compartment release button will open the rear compartment lid.

Rear Compartment Lid Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the rear compartment lid release touch pad. The rear compartment lid will open.

Tailgate Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the tailgate release touch pad. The rear tailgate will open.

Vehicle Locator/Panic Alarm/Active

A single press of the panic button performs the following functions. Some functions may be dependent on personalization settings:

- Pulses the horn three times
- Flashes the exterior lamps three times

A press and hold of the panic button performs the following functions:

- Pulses the horn and flashes the parking lamps for 30 second or until the following conditions occur:
  - The panic button is pressed
  - The ignition switch is turned to the RUN position with a valid key

Remote Vehicle Start/Active (If Equipped)

The remote vehicle start function allows engine starting while not in the vehicle. It also allows the vehicle HVAC system and other vehicle systems to enable, providing a comfortable vehicle upon entry. The remote vehicle start sequence begins by pressing and releasing the remote vehicle start button on the keyless entry transmitter twice. The turn signal lamps will illuminate to indicate the vehicle has received the remote start request. Each time a remote vehicle start is performed, the vehicle doors are locked, however they may then be unlocked/locked with the transmitter at any time. Once activated, the engine is allowed to run for 15 minutes. The remote start operation can be repeated as many times as desired up to a total run time of 30 minutes. The remote vehicle start event may be cancelled at any time by pressing only the remote vehicle start button on the transmitter or by entering the vehicle and turning ON the hazard lamps.

Hood Ajar Switch/Active

The hood switch provides status of the hood to the BCM for remote vehicle start purposes. The switch is integrated into the hood latch assembly. The hood ajar switch provides 2 separate inputs to the BCM. These separate inputs allow the BCM to actively monitor for a hood ajar switch fault.

Remote Vehicle Start Circuit Description/ Active

The BCM receives a signal from the keyless entry transmitter indicating a remote vehicle start request. The BCM and ECM use the following inputs to verify the system is ready to enable a remote vehicle start event:

- Vehicle is not in valet mode
- Vehicle is in park
- Keyless entry transmitter is not in the vehicle
- The hood is closed
- The hazard switch is OFF
- Vehicle power mode is OFF
- The malfunction indicator lamp (MIL) is not commanded ON by the ECM
- Remote start timer does not equal 0 (the 30 minute maximum time has not been used)

When the BCM determines all conditions meet those required for a remote vehicle start event, a message is sent via serial data to the ECM. While the ECM is in remote vehicle start mode it will cut fuel to the engine if any of the following monitored conditions occur:

- Vehicle speed is greater than 0
- Transmission is not in P
- Excessive engine coolant temperature
- Low oil pressure
- Engine crank time is greater than 30 seconds
- Excessive engine speed
- Accelerator pedal position too high
- Immobilizer system indicates a theft attempt

If any conditions prevent a remote start or cause a remote start operation to be cancelled there is a record of the cause in the scan tool.

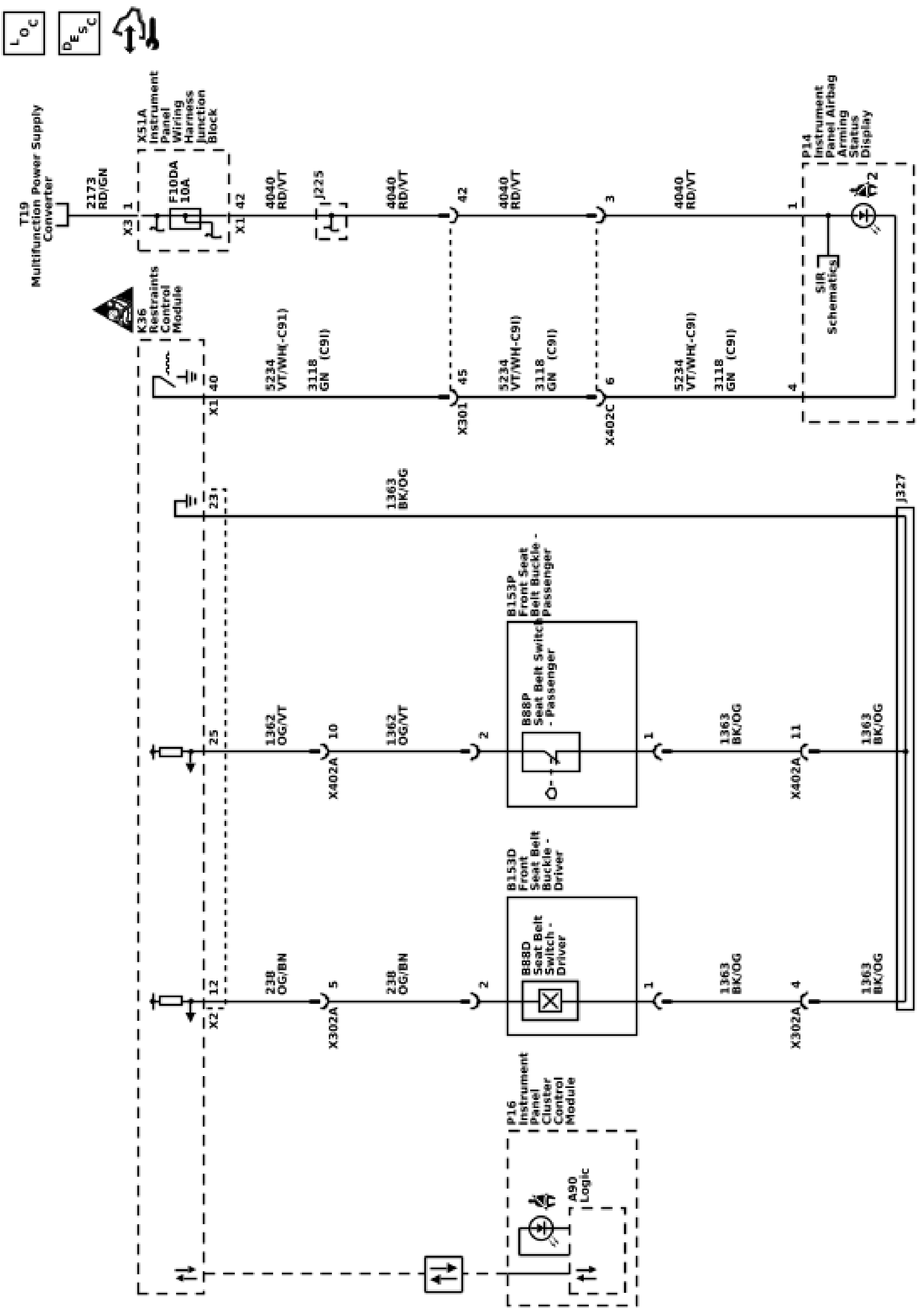
Keyless Entry Personalization

Vehicle lock/unlock functions and remote vehicle start settings may be personalized for the vehicle. This includes the capability of turning the passive entry system completely off. For functional descriptions and programming instructions, refer to the vehicle owners manual.

Seat Belts

Schematic and Routing Diagrams

Seat Belt Schematics (Front Seat Belt Switches and Indicator)


LOC
DESC
T19 Multifunction Power Supply Converter
2173 RD/GN
X3 1
X51A Instrument Panel Wiring Harness Junction Block
F10DA 10A
X1 42
4040 RD/VT
J225
4040 RD/VT
42
4040 RD/VT
3
4040 RD/VT
1
P14 Instrument Panel Airbag Arming Status Display
2
SIR Schematics
K36 Restraints Control Module
X1 40
5234 VT/WH(-C91)
3118 GN (C9I)
X301 45
5234 VT/WH(-C9I)
3118 GN (C9I)
X402C 6
5234 VT/WH(-C9I)
3118 GN (C9I)
4
23
1363 BK/OG
J327
B153P Front Seat Belt Buckle - Passenger
B88P Seat Belt Switch - Passenger
25
1362 OG/VT
X402A 10
1362 OG/VT
2
1
1363 BK/OG
X402A 11
1363 BK/OG
B153D Front Seat Belt Buckle - Driver
B88D Seat Belt Switch - Driver
X2 12
238 OG/BN
X302A 5
238 OG/BN
2
1
1363 BK/OG
X302A 4
1363 BK/OG
P16 Instrument Panel Cluster Control Module
A90 Logic

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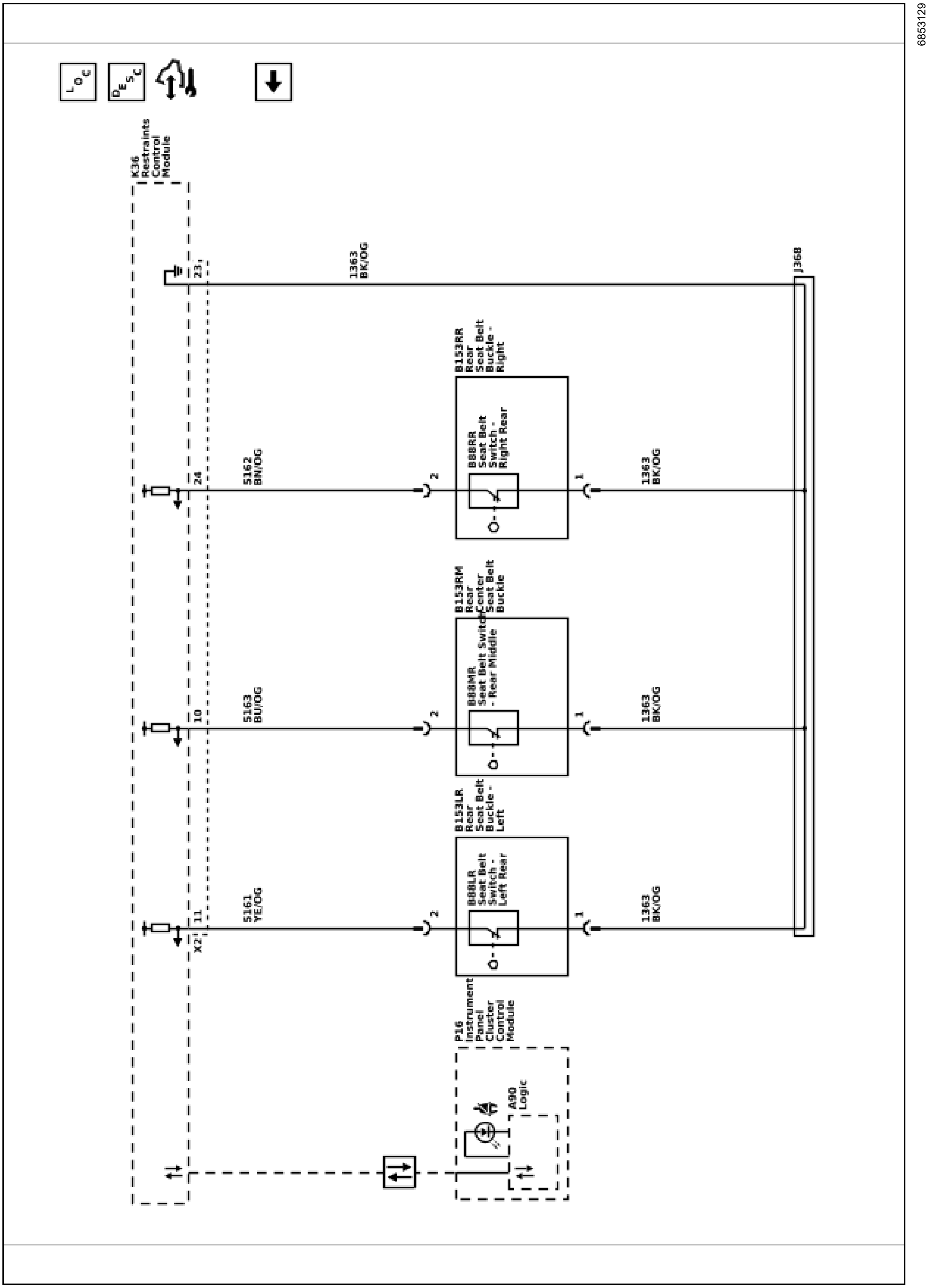
Seat Belt Schematics (Rear Seat Belt Switches)


6853129
LOC
DESC
K36 Restraints Control Module
23
1363 BK/OG
J368
24
5162 BN/OG
2
B153RR Rear Seat Belt Buckle - Right
B88RR Seat Belt Switch - Right Rear
1
1363 BK/OG
10
5163 BU/OG
2
B153RM Rear Center Seat Belt Buckle
B88MR Seat Belt Switch - Rear Middle
1
1363 BK/OG
X2
11
5161 YE/OG
2
B153LR Rear Seat Belt Buckle - Left
B88LR Seat Belt Switch - Left Rear
1
1363 BK/OG
P16 Instrument Panel Cluster Control Module
A90 Logic

Description and Operation

Seat Belt System Description and Operation

Restraint System

The primary means of occupant restraint are the front and rear seat belts. Seat belts help to keep the occupants inside the passenger compartment and gradually reduce the impact forces during the following events:

- Frontal impact
- Rear impact
- Side impact
- Rollover event

All seat belt retractors have emergency locks. The retractors remain unlocked during normal operation and under normal driving conditions to allow free movement of the upper body of each occupant. The seat belt webbing is locked into position by a pendulum, which causes a locking bar to engage a cog on the spool of the retractor mechanism, when the following conditions occur:

- Rapid extraction of the seat belt webbing from the retractor
- Abrupt change in vehicle velocity
- Operation of the vehicle on a steep slope

The seat belts have an automatic locking (cinch) feature. The cinch feature is activated when the seat belt webbing is completely extended from the retractor. It prevents the webbing from extending beyond the position at which it can retract. Use of the cinch feature is recommended for securing a child seat. The cinch feature may be cancelled by allowing the webbing to wind back completely into the retractor. After the cinch feature is cancelled, the webbing is unlocked. This vehicle is also equipped with a Supplemental Inflatable Restraint (SIR) system. Refer to *Supplemental Inflatable Restraint System Description and Operation 9-47*.

Motorized Seat Belts

A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor. The motor performs a reversible, pretightening action (retraction) to reduce the slack in the seat belt. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics
- Slack removal when the vehicle speed above enable speed

Preconditions for motorized seat belt retractions

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

Triggers that may cause motorized seat belt retractions

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

Motorized seat belt inputs

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration
- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

Motorized seat belt output signals

- Driver information center message – motorized seat belt Failed “Service Automatic Seatbelt Tightening”
- Driver information center message – motorized seat belt Unavailable “Automatic Seatbelt Tightening Unavailable”

Motorized seat belt retractions are inhibited when seat belt unbuckled.

Driver and passenger motorized seat belts operate independently.

Front Seat Belt System

The front seat belt system includes the driver and passenger seat belts, seat belt reminder indicators, retractors, and anchor pretensioners. They are all part of the SIR system, refer to *Supplemental Inflatable Restraint System Description and Operation 9-47* . The driver seat belt reminder indicator is controlled by a switch in the driver seat belt buckle. The passenger seat belt reminder indicator is controlled by a switch in the passenger seat belt buckle and the Restraint Occupant Classification System Module. For more on the Restraint Occupant Classification System Module, refer to *Supplemental Inflatable Restraint System Description and Operation 9-47*. When the vehicle is on, the seat belt reminder indicator and tone alarm will operate in the following cases:

- The driver seat belt is unbuckled.
- The passenger seat belt is unbuckled while the seat is occupied.

Rear Seat Belt System

The rear seat belt system includes the following components:

- The rear seat belt retractor located at the wheelhouse panel and attached to the floor panel.
- The rear seat belt buckles and the center seat belt buckle attached to the seat.

Child Seat Restraint System

Warning: A child in a rear-facing child restraint can be seriously injured if the front passenger air bag inflates, because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information, refer to the vehicle owner's manual and the instructions that came with the child restraint.

All vehicles are equipped with a dual-mode type retractor with emergency and automatic locking features. The automatic locking feature is for the restraint of a child seat. The child seat can be secured by pulling the seat belt all the way out to lock it, then tightening the seat belt around the child seat. If the child seat has a top strap, the child seat should be anchored. This applies to the seats designed with the top strap provision and for the vehicles sold in Canada. To ensure the correct top strap angle, the child seat is only to be used at the seating position for which the top strap anchor is installed. The child seat should be installed and secured according to the manufacturer's directions.

Seat Belt Reminder Indicators

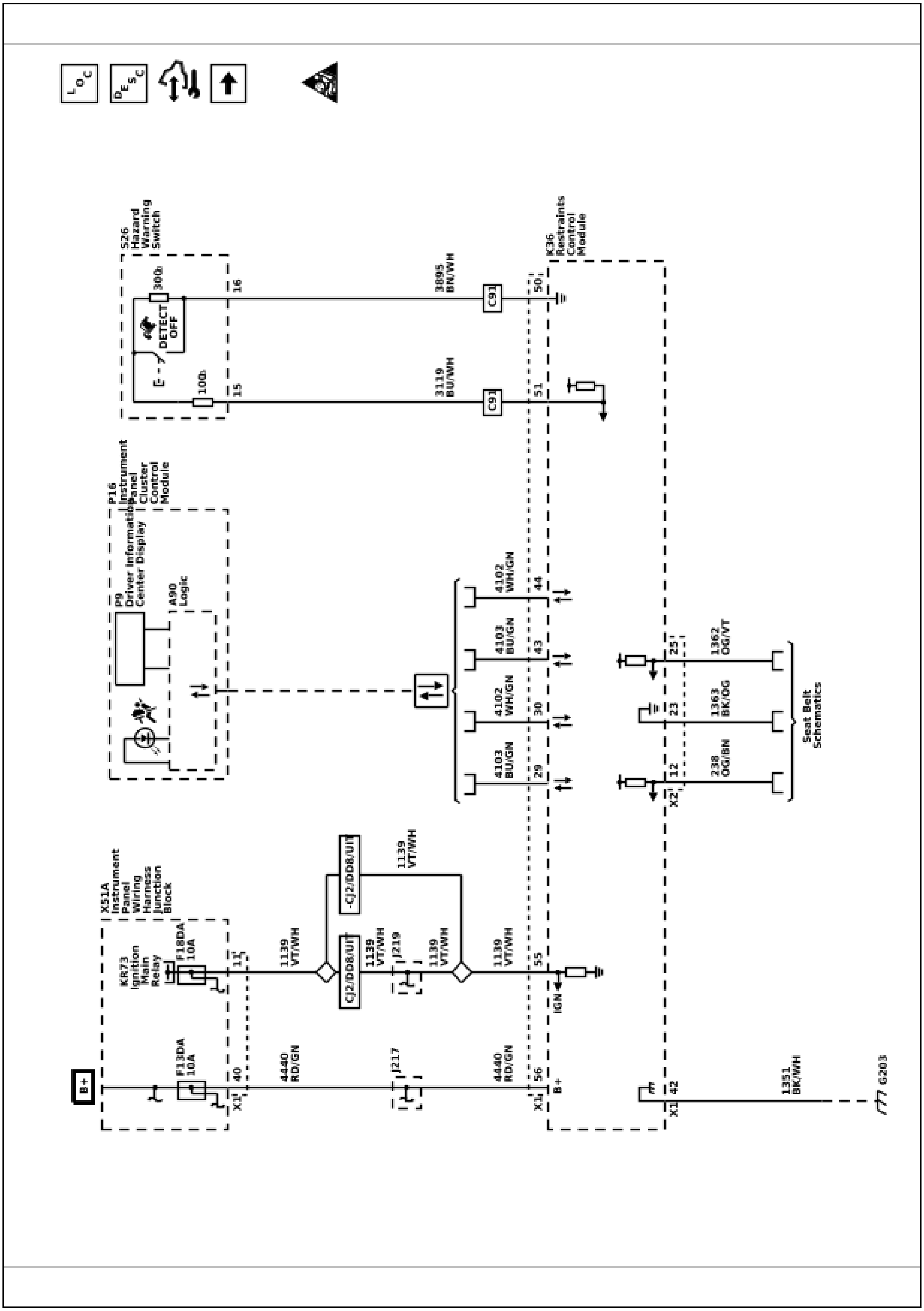
There is a driver seat belt reminder indicator located on the instrument cluster and a passenger seat belt reminder located on the overhead console. There also may have a rear seat belt reminder located in the instrument cluster. The state of the seat belt reminder indicators is determined by the Restraints Control Module. The seat belt reminder indicator illuminates under the following conditions:

- The Restraints Control Module sends the status of the driver seat belt to the instrument cluster via serial data. The passenger seat belt status is sent to the driver information center via serial data. The rear seat belt status is sent to the driver information center via serial data. If any of the seat belts are unfastened, the instrument cluster will send a message requesting a chime sound to be turned ON after a system check.

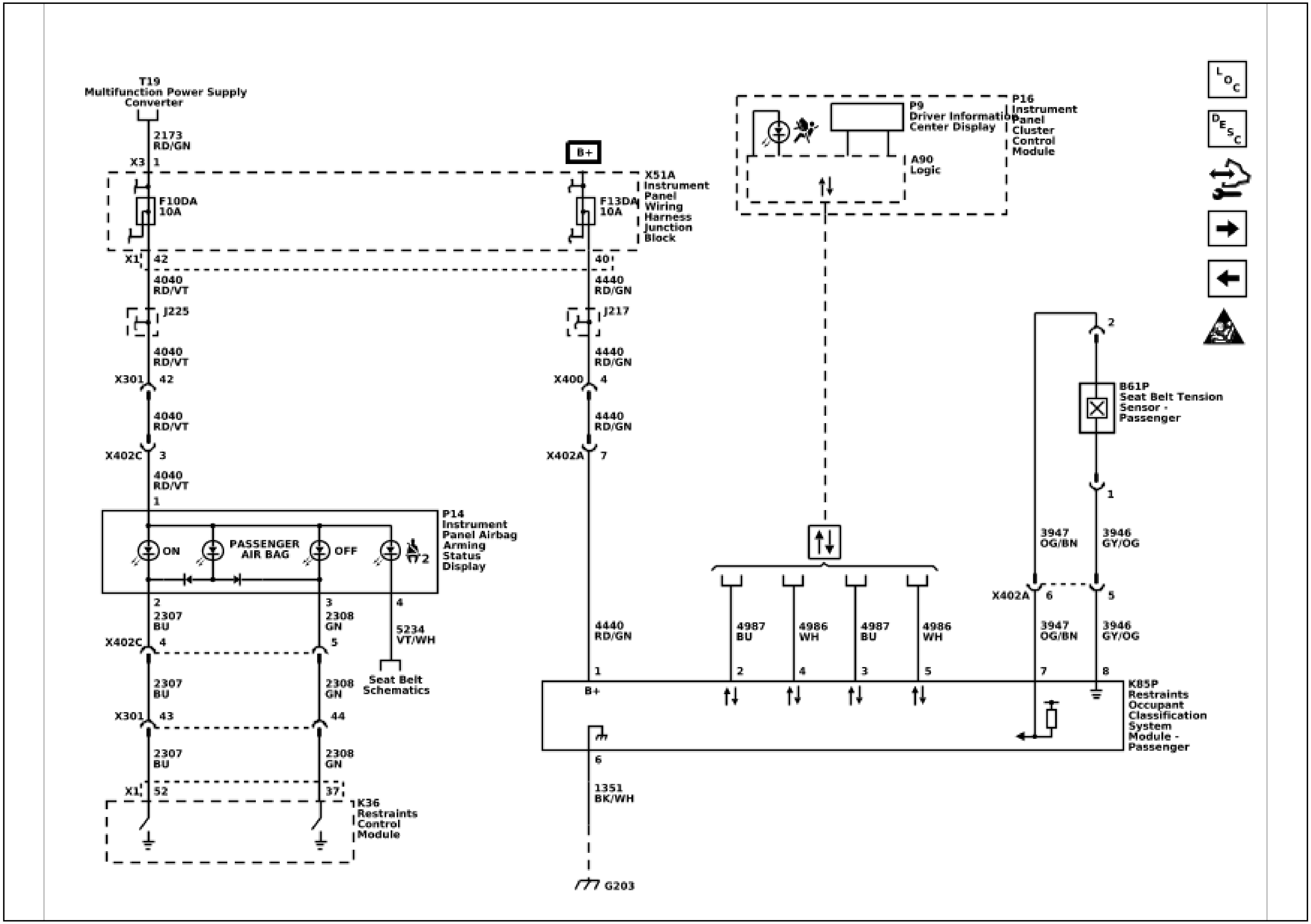
Supplemental Restraints

Schematic and Routing Diagrams

SIR Schematics (Module Power, Ground, Serial Data, Controls, Indicators, and Subsystem References)


6853131
LOC
DESC
B+
X51A Instrument Panel Wiring Harness Junction Block
F13DA 10A
KR73 Ignition Main Relay
F18DA 10A
X1 40
11
4440 RD/GN
1139 VT/WH
CJ2/DD8/UI
-CJ2/DD8/UI
J217
J219
X1 56
55
B+
IGN
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
4103 BU/GN
4102 WH/GN
29
30
43
44
S26 Hazard Warning Switch
DETECT OFF
300Ω
100Ω
16
15
3895 BN/WH
3119 BU/WH
C91
50
51
K36 Restraints Control Module
X2 12
23
25
238 OG/BN
1363 BK/OG
1362 OG/VT
Seat Belt Schematics
X1 42
1351 BK/WH
G203

SIR Schematics (Passenger Presence Module)


T19
Multifunction Power Supply Converter
2173
RD/GN
X3 1
F10DA
10A
X1 42
4040
RD/VT
J225
4040
RD/VT
X301 42
4040
RD/VT
X402C 3
4040
RD/VT
1
P14
Instrument Panel Airbag Arming Status Display
ON
PASSENGER AIR BAG
OFF
2
2
2307
BU
3
2308
GN
4
5234
VT/WH
Seat Belt Schematics
X402C 4
5
2307
BU
2308
GN
X301 43
44
2307
BU
2308
GN
X1 52
37
K36
Restraints Control Module
B+
F13DA
10A
X51A
Instrument Panel Wiring Harness Junction Block
40
4440
RD/GN
J217
4440
RD/GN
X400 4
4440
RD/GN
X402A 7
4440
RD/GN
1
B+
6
1351
BK/WH
G203
P9
Driver Information Center Display
P16
Instrument Panel Cluster Control Module
A90
Logic
4987
BU
4986
WH
4987
BU
4986
WH
2
4
3
5
K85P
Restraints Occupant Classification System Module - Passenger
B61P
Seat Belt Tension Sensor - Passenger
2
1
3947
OG/BN
3946
GY/OG
X402A 6
5
3947
OG/BN
3946
GY/OG
7
8
L O C
D E S C

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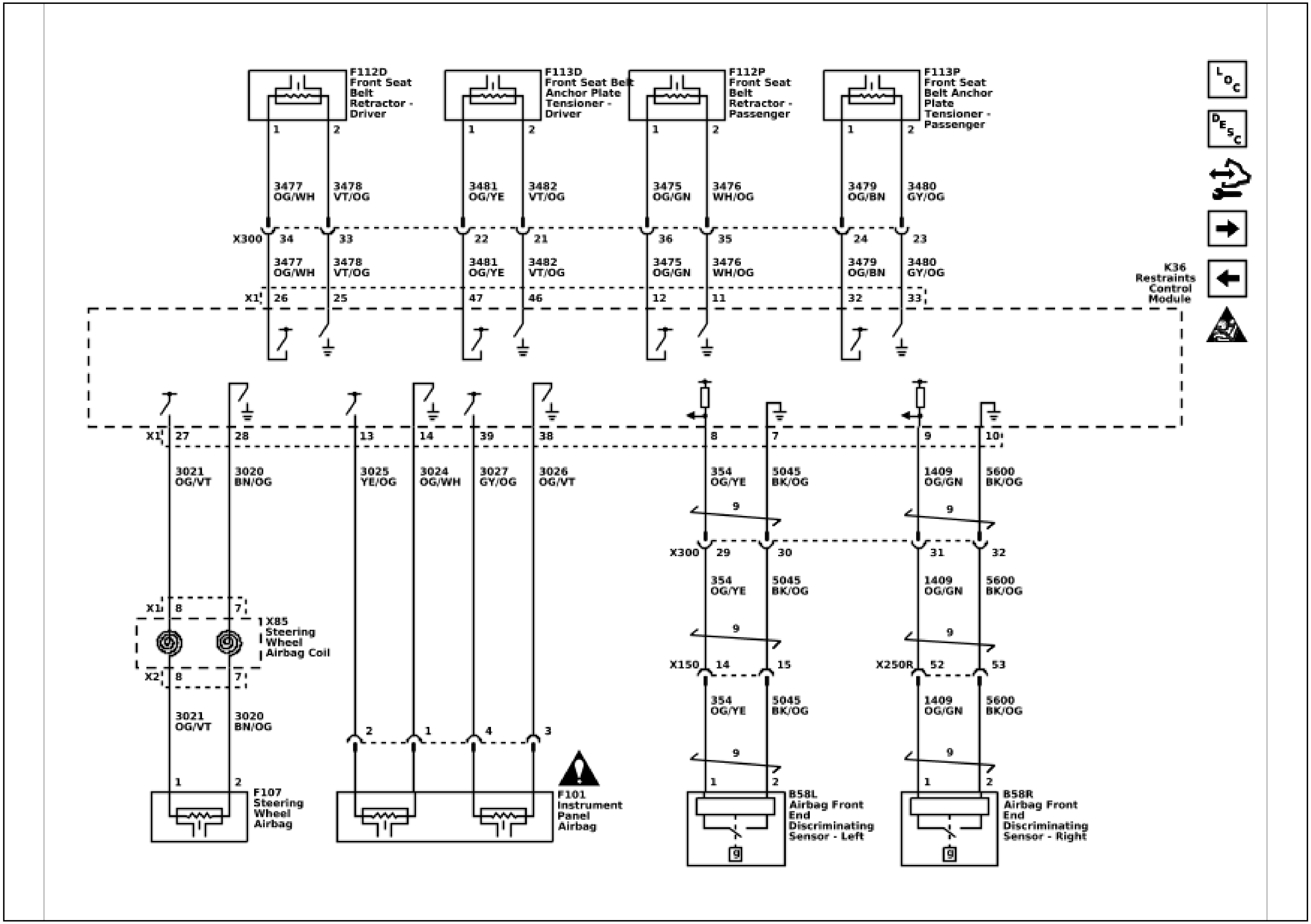
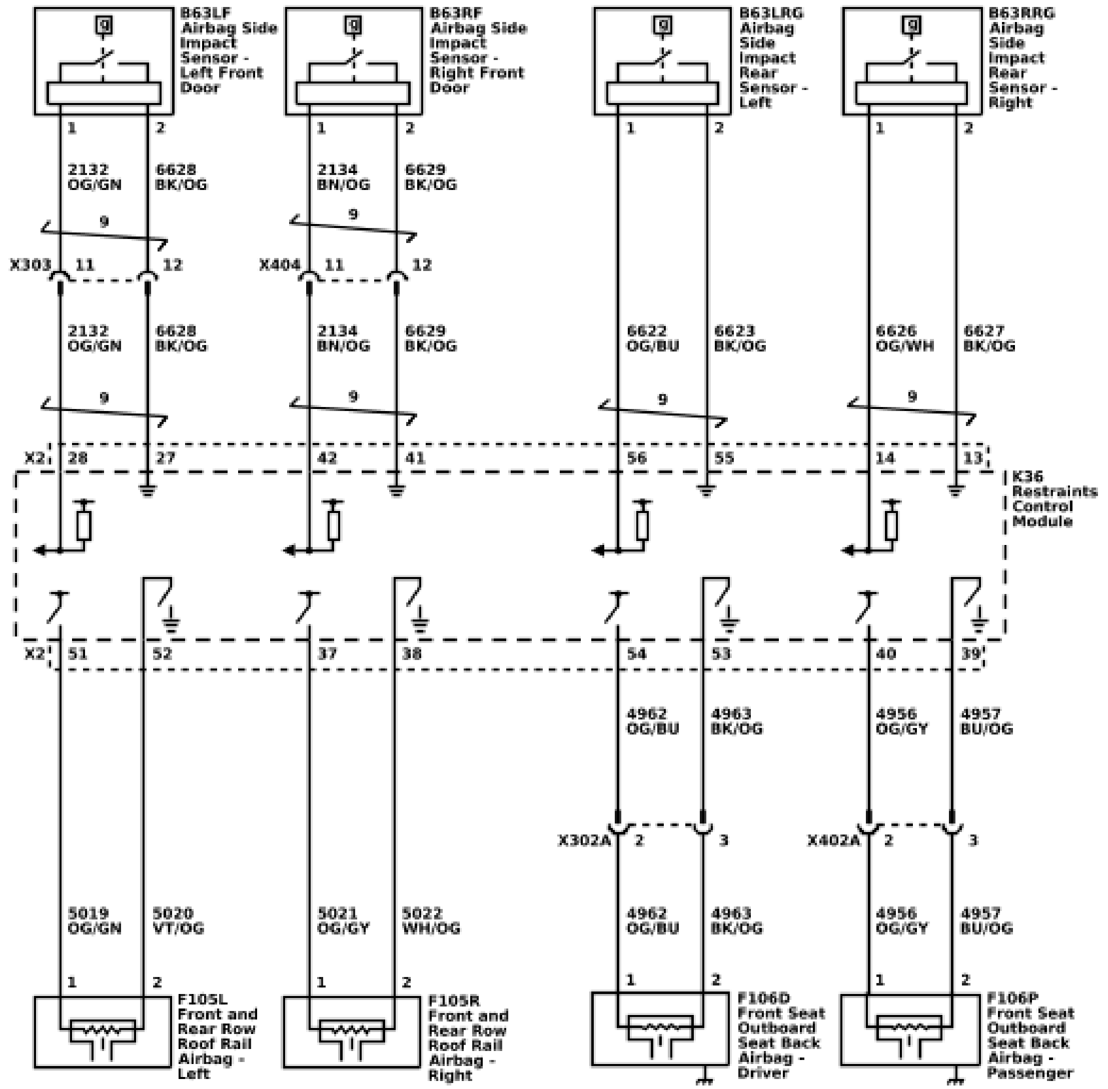
SIR Schematics (Frontal Impact Sensing and Deployment)



F112D Front Seat Belt Retractor - Driver
F113D Front Seat Belt Anchor Plate Tensioner - Driver
F112P Front Seat Belt Retractor - Passenger
F113P Front Seat Belt Anchor Plate Tensioner - Passenger
1
2
3477 OG/WH
3478 VT/OG
3481 OG/YE
3482 VT/OG
3475 OG/GN
3476 WH/OG
3479 OG/BN
3480 GY/OG
X300
34
33
22
21
36
35
24
23
X1
26
25
47
46
12
11
32
33
K36 Restraints Control Module
27
28
13
14
39
38
8
7
9
10
3021 OG/VT
3020 BN/OG
3025 YE/OG
3024 OG/WH
3027 GY/OG
3026 OG/VT
354 OG/YE
5045 BK/OG
1409 OG/GN
5600 BK/OG
9
X300
29
30
31
32
X1
8
7
X85 Steering Wheel Airbag Coil
X2
8
7
X150
14
15
X250R
52
53
2
1
4
3
F107 Steering Wheel Airbag
F101 Instrument Panel Airbag
B58L Airbag Front End Discriminating Sensor - Left
B58R Airbag Front End Discriminating Sensor - Right

6853133

SIR Schematics (Side Impact Sensing and Deployment)


B63LF Airbag Side Impact Sensor - Left Front Door
B63RF Airbag Side Impact Sensor - Right Front Door
B63LRG Airbag Side Impact Rear Sensor - Left
B63RRG Airbag Side Impact Rear Sensor - Right
1
2
2132 OG/GN
6628 BK/OG
2134 BN/OG
6629 BK/OG
9
X303
11
12
X404
6622 OG/BU
6623 BK/OG
6626 OG/WH
6627 BK/OG
X2
28
27
42
41
56
55
14
13
K36 Restraints Control Module
51
52
37
38
54
53
40
39
4962 OG/BU
4963 BK/OG
4956 OG/GY
4957 BU/OG
X302A
X402A
3
5019 OG/GN
5020 VT/OG
5021 OG/GY
5022 WH/OG
F105L Front and Rear Row Roof Rail Airbag - Left
F105R Front and Rear Row Roof Rail Airbag - Right
F106D Front Seat Outboard Seat Back Airbag - Driver
F106P Front Seat Outboard Seat Back Airbag - Passenger

6853134

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

The supplemental inflatable restraint (SIR) system, comprised of the Restraints Control module (RCM), impact sensors, Airbags, Restraint Occupant Classification System Module, and seat belt Pretensioners, supplements the protection offered by the seat belts. The RCM determines the severity of a collision using data collected from impact sensors located at strategic points on the vehicle. The RCM processes the information provided by the sensors to provide the safest combination of Airbag and pretensioner deployment. The RCM will deploy the Airbags and Pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant Airbag deployment, the RCM may still deploy the seat belt Pretensioners. The RCM contains a sensing device that translates vehicle acceleration to an electrical signal. The RCM compares these signals to the threshold values stored in memory. If the signals exceed the stored threshold value, the RCM will determine the severity of the event and may deploy restraints. The RCM continuously monitors the deployment loops and electrical components for malfunctions. Upon detection of a circuit malfunction, the RCM will set a DTC and illuminate the SIR system Airbag indicator.

Note: The SIR System may be active up to 30 seconds after the ignition transitions to OFF.

The supplemental inflatable restraint system utilizes the following components:

- Restraints Control Module
- Airbag Indicator
- Airbags
- Seat Belt Pretensioners
- Impact Sensors
- Restraints Occupant Classification System Module (AL0)
- Passenger Airbag Indicator (C99 / AL0)
- Passenger Airbag Disable Switch (C99)
- Seat Belt Tension Sensor
- Seat Belt Indicators
- Event Data Recorder (EDR) Data
- Non-locked event storage overwrite mechanism and over writable event types

Restraints Control Module

The RCM is the control unit for the SIR system. The RCM contains internal sensors in addition to the external impact sensors. The RCM contains sensors which translate vehicle acceleration into an electrical signal, which may be used by other modules. In the event of a collision, the RCM compares the signals from the internal and external impact sensors to a threshold value stored in memory. When the generated signals exceed the stored value, the RCM will cause current to flow through the appropriate deployment loops to deploy the restraints. The RCM records the SIR system status when a deployment occurs and illuminates the SIR system Airbag indicator. The RCM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is ON. If the RCM detects a malfunction, a DTC will set and the RCM will command the instrument cluster to illuminate the SIR system Airbag indicator, notifying the driver that a malfunction exists. If power is lost during a collision, the RCM maintains a limited energy reserve for deployment of the Airbags. It is important when disabling the SIR system for servicing or rescue operations to allow the limited energy reserve to dissipate, which could take up to 2 minutes.

Airbag Indicator

The SIR system Airbag indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and verify that the RCM is communicating with the instrument cluster. When the ignition is turned ON, the RCM is active. The instrument cluster will momentarily turn on the SIR system Airbag indicator. While the indicator is on, the RCM conducts tests on all SIR system components and circuits. If no malfunctions are detected the RCM will communicate with the instrument cluster through the serial data circuit and command the SIR system Airbag indicator to turn OFF. The RCM provides continuous monitoring of the SIR system components and circuits by conducting a sequence of checks. If a malfunction is detected the RCM will set a DTC and command the instrument cluster to illuminate the SIR system Airbag indicator via serial data. The presence of an SIR system malfunction could result in non-deployment of the inflatable restraints or deployment in conditions that normally would not warrant deployment. The SIR system Airbag indicator will remain on for the duration of the malfunction or until the system has been repaired.

Airbags

The vehicle will contain a number of Airbags, depending on vehicle available and optional equipment:

- Steering wheel
- Instrument panel
- Driver seat
- Passenger seat
- Instrument Panel Lower Airbag
- Passenger knee
- Left roof rail
- Right roof rail

To view the locations of the Airbags refer to: *Master Electrical Component List 7-641*.

Airbags contain a housing, inflatable Airbag, an initiating device, a canister of gas generating material and, in some cases, stored compressed gas. Each Airbag has a discrete deployment loop to supply current and deploy the Airbag. The current passing through the Airbags ignite the material in the canister producing a rapid generation of gas and is some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the Airbag. Once the Airbag is inflated, it deflates through the Airbag vent holes and/or the bag fabric.

The steering wheel and instrument panel Airbag will either be a dual-stage or a single stage design. A dual-stage Airbag uses two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions, the Airbag deploys at less than full deployment which consists of stage 1 of the Airbag. During a more severe frontal collision, a full deployment is initiated which consists of stage 1 and stage 2 of the Airbag.

Seat Belt Pretensioners

The vehicle will contain a number of seat belt Pretensioners, depending on vehicle available and optional equipment:

- Driver – Seat belt anchor
- Driver – Seat belt retractor
- Passenger – Seat belt anchor
- Passenger – Seat belt retractor
- Rear Outboard Left/Right Passenger – Seat belt retractor

To view the locations of the Airbags refer to: *Master Electrical Component List 7-641*.

The seat belt Pretensioners consist of a housing, seat belt retractor, seat belt anchor, seat belt webbing, initiator, and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the RCM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt Pretensioners which removes the slack in the seat belts. Depending on the severity of the collision, the seat belt Pretensioners may deploy without the frontal inflator modules deploying, or they will deploy immediately before the frontal inflator modules deploy.

Impact Sensors

The vehicle will contain a number of impact sensors, depending on vehicle available and optional equipment:

- Front Impact Sensor — Left
- Front Impact Sensor — Right
- Side Impact Sensor — Left Front
- Side Impact Sensor — Right Front
- Side Impact Sensor — Left Middle
- Side Impact Sensor — Right Middle
- Side Impact Sensor — Left Rear
- Side Impact Sensor — Right Rear

To view the locations of the Airbags refer to: *Master Electrical Component List 7-641*.

The impact sensors contain a sensing device which monitors vehicle acceleration or pressure to detect collisions that are severe enough to warrant Airbag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the RCM.

Restraints Occupant Classification System Module

The Restraints Occupant Classification System Module is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the RCM. The RCM then uses this information to determine whether to enable or suppress the deployment of the passenger instrument panel Airbag. The Restraints Occupant Classification System Module consists of an electronic control module, a sensor mat in the seat, Seat Belt Tension Sensor (if equipped), and a harness.

Passenger Airbag Indicator

The passenger Airbag indicator identifies the status of the instrument panel Airbag. The RCM will momentarily turn on the passenger Airbag indicators after ignition is turned ON. If an occupant is not detected in the passenger seat or the occupant type is not suitable for Airbag deployment, the Restraints Control module will illuminate the passenger Airbag OFF indicator. If an occupant is detected in the passenger seat, the Restraints Control module will illuminate the passenger Airbag ON indicator.

Seat Belt Tension Sensor

The seat belt tension sensor (if equipped) is mounted on the passenger seat belt retractor to measure the seat belt tension. If the shoulder portion of a passenger seat belt is fully extended, the infant car seat restraint locking feature may be engaged, disabling the passenger Airbag.

Passenger Airbag Disable Switch

The passenger Airbag disable switch provides the means to manually disable the ability for the passenger instrument panel Airbag to deploy. The vehicle has a passenger Airbag status indicator to inform the driver when the passenger Airbag is on or off based on the disable switch position.

Seat Belt Indicators
The seat belt indicators are controlled by the RCM. For further information on seat belt indicators refer to: *Seat Belt System Description and Operation 9-40*.

Event Data Recorder (EDR) Data
The vehicle is equipped with an event data recorder (EDR). When a specific collision or similar condition occurs (such as airbag deployment or hitting a road obstacle), the recorder records the data related to vehicle dynamics and safety systems within a short period of time, such as the status of occupant safety components, status of accelerator/brake pedals, vehicle speed, etc., helping understand the operating conditions of vehicle systems.

The data elements recorded by EDR mainly include the following data:

No.	Data Element	Data Source	Collection Method
A1	Longitudinal delta V	EDR acceleration sensor in EDR controller	None
A2	Maximum recorded longitudinal delta V	EDR acceleration sensor in EDR controller	None
A3	Time to maximum recorded longitudinal delta V	EDR acceleration sensor in EDR controller	None
A4	Clipping flag	Since B1 lateral acceleration has been recorded, it is not necessary to record the clipping flag	None
A5	Vehicle velocity	Wheel speed sensor, transmitted via CAN bus after calculation	CAN bus
A6	Service brake, on or off	Brake pedal position sensor, transmitted via CAN bus after calculation	CAN bus
A7	Driver safety belt status	Driver seat belt buckle	Hard wire
A8	Accelerator pedal position, percentage of fully open position	Accelerator pedal position sensor, transmitted via CAN bus after calculation	CAN bus
A9	Revolution Per Minute (RPM)	Engine crankshaft position sensor, transmitted via CAN bus after calculation *Not required for electric vehicles	CAN bus *Not required for electric vehicles
A10	Power-on cycle at event	EDR controller	None
A11	Power-on cycle at reading	EDR controller	None
A12	Complete status of event data record	EDR controller	None
A13	Time interval from this event to the last event	EDR controller	None
A14	Vehicle Identification Number(VIN)	EDR controller	None
A15	ECU hardware number	EDR controller	None
A16	ECU serial number	EDR controller	None
A17	ECU software number	EDR controller	None
B1	Longitudinal acceleration	EDR acceleration sensor in EDR controller	None

No contents related to intelligent control are available now for Level A elements above.

The recorded vehicle speed data is obtained from the on-board CAN bus. They are obtained by a vehicle speed sensor connected to other modules on the vehicle (such as engine control or transmission control module or new energy control, etc.), and transmitted and released via CAN bus after calculation.

The above data can be extracted by purchased general on-board diagnostic tools that meet the requirements in SAE J1962 and ISO 15765 and their referenced standards.

Non-locked event storage overwrite mechanism and over writable event types

Locking Conditions:

- Deployment event of irreversible restraints will be permanently locked.

- Non-deployment events will be locked, but become non-locked events after 255 ignition cycles.

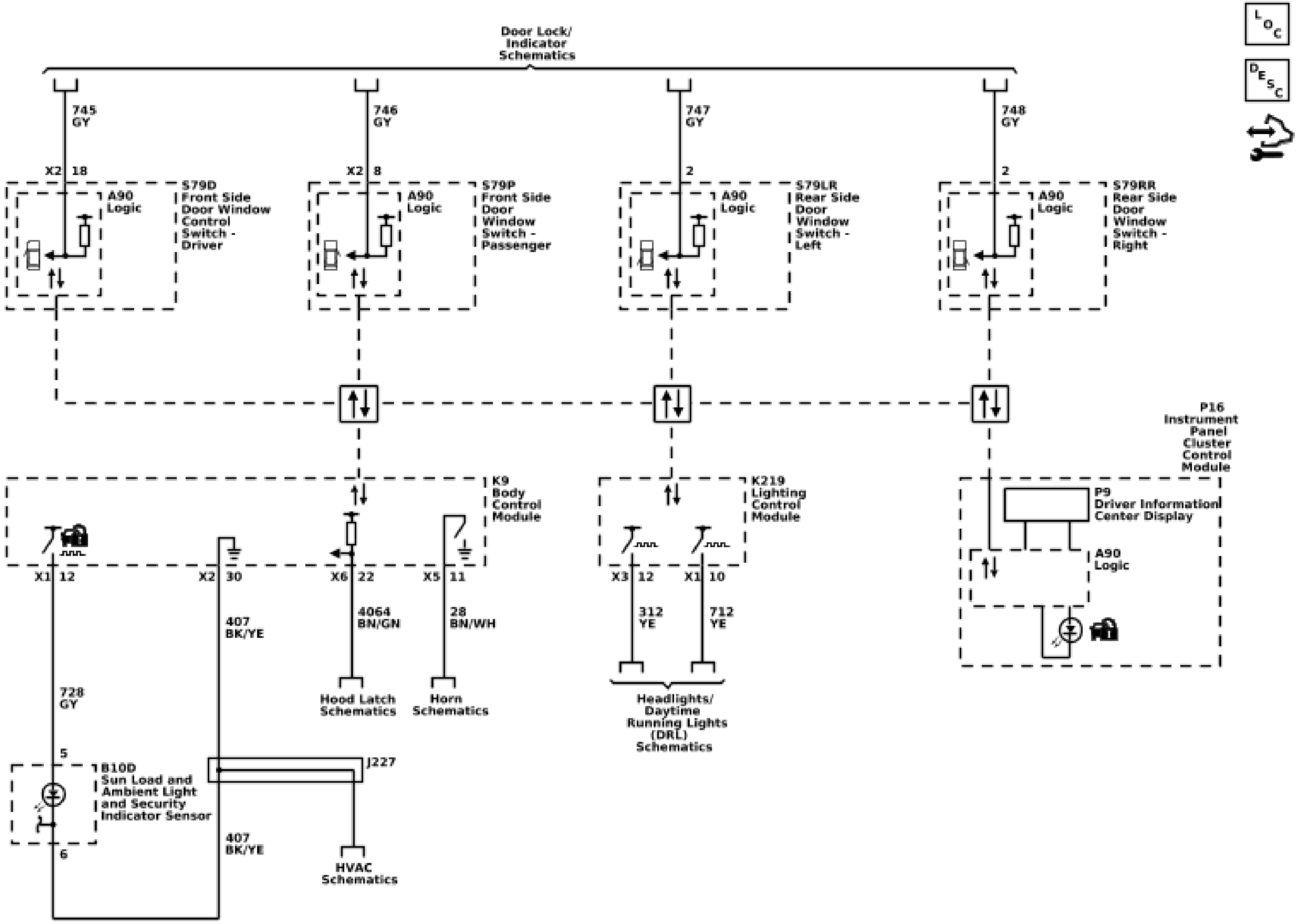
Overwrite Mechanism:

- Permanently locked events will not be overwritten. Only the non-locked EDR events can be overwritten, overwriting the earliest event first.
- If the EDR storage space is insufficient, the deployment events of irreversible restraints can overwrite any non-deployment events.
- If the EDR storage space is insuficcient, the non-deployment events can overwrite any non-deployment events that become non-locked after 255 ignition cycles.

Theft Deterrent

Schematic and Routing Diagrams

Theft Deterrent System Schematics (Content Theft Deterrent Indicator, Inputs, and Outputs)


L O C
D E S C
Door Lock/ Indicator Schematics
745 GY
746 GY
747 GY
748 GY
X2 18
X2 8
2
2
A90 Logic
S79D Front Side Door Window Control Switch - Driver
S79P Front Side Door Window Switch - Passenger
S79LR Rear Side Door Window Switch - Left
S79RR Rear Side Door Window Switch - Right
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
K9 Body Control Module
K219 Lighting Control Module
X1 12
X2 30
X6 22
X5 11
X3 12
X1 10
407 BK/YE
4064 BN/GN
28 BN/WH
312 YE
712 YE
728 GY
Hood Latch Schematics
Horn Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
5
6
B10D Sun Load and Ambient Light and Security Indicator Sensor
J227
HVAC Schematics

6853142

Description and Operation

Theft Systems Description and Operation

When armed, the content theft deterrent system is designed to deter vehicle content theft by pulsing the horns and exterior lamps for approximately 30 seconds when an unauthorized vehicle entry is detected. However, the content theft deterrent system does not affect engine starting.

An unauthorized entry can be any of the following with the content theft deterrent system armed:

- Unauthorized entry into the engine area
- Unauthorized entry into the vehicle compartments
- When any door is opened without using the UNLOCK command from a keyless entry transmitter
- After a battery reconnect, if the battery was disconnected with the content theft deterrent system armed

The components of the content theft deterrent system are:

- Body Control Module (BCM)
- Remote control door lock receiver
- Security indicator
- Door ajar switches
- Hood ajar switch
- Liftgate ajar switch, if equipped
- Intrusion sensor, if equipped
- Intrusion sensor disable switch, if equipped
- Glass breakage sensor, if equipped
- Alarm siren, if equipped

Arming the Content Theft Deterrent System

Use the following procedure in order to arm the system:

1. Place the vehicle in P (park).
2. Ignition OFF/Vehicle OFF.
3. Open any door.

Note: The system is not armed if the doors are locked manually; the power door lock switch or remote keyless entry transmitter must be used to arm the content theft deterrent system.

4. Lock the doors with the power door lock switch or by pressing the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.
5. The system will begin the arm sequence immediately after the last door is closed. If the keyless entry transmitter is used to arm the system after the vehicle doors are closed, the arm sequence will begin as soon as the LOCK command is received from the transmitter.
6. Pressing the LOCK button on the keyless entry transmitter a second time will bypass the delayed arming function and force the system to arm.

Locking the Vehicle Without Arming the Content Theft Deterrent System

Locking the vehicle may be accomplished without arming the content theft deterrent system. Use of the manual door locks will lock the vehicle, but will not arm the content theft deterrent system.

Disarming an Armed System/Silencing an Alarm

If system arming has been requested by the power door lock switch or the keyless entry transmitter, it must be disarmed.

Note: Disconnecting the battery or removing fuses does not disable the arm or alarm modes, since the BCM stores the content theft deterrent mode status in memory.

- To disarm the content theft deterrent system in standby mode, perform one of the following:
  - Press the UNLOCK button on the keyless entry transmitter.
  - Approach the vehicle with a valid keyless entry transmitter and pull the vehicle door handle.
  - Turn the ignition ON/Vehicle ON.
- To disarm the content theft deterrent system in the armed mode (non-event) or when activated (during an alarm event):
  - Press the UNLOCK button on the keyless entry transmitter.
  - Turn the ignition ON/Vehicle ON.

Content Theft Deterrent Circuit Description

The following is a description of each component used in the content theft deterrent system:

Body Control Module
The content theft deterrent system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform content theft deterrent functions. When the BCM detects an unauthorized entry, it activates the horns and exterior lamps. The BCM has 4 basic modes (disarmed, standby, armed, and alarm) for operating the content theft deterrent system. The different modes are described below.

1. The BCM has the content theft deterrent system in a disarmed mode until the following conditions are detected:

- Ignition OFF/Vehicle OFF.
- Doors locked by either the power door lock switch or the LOCK button on the transmitter.

2. The BCM enters the standby mode when the above conditions are detected. If a door was already opened when the arm mode was requested, the standby mode does not start the timer until the last door is closed.
3. When the last door is closed, a 15 second timer is activated. Once the timer has expired, the BCM enters the armed mode. After this delay, any unauthorized entry will activate the alarm mode.
4. When the BCM detects an unauthorized entry, the BCM enters the alarm mode. The BCM activates the horns and exterior lamps for 30 seconds. This is followed by a three minute time-out with the horn no longer active. If no new intrusions are detected after the time-out, the horn is not active. The system must be disarmed or the intrusion condition removed after the time-out for the system to exit alarm mode.

Remote Control Door Lock Receiver

The keyless entry system can arm and disarm the content theft deterrent system. When the remote control door lock receiver receives a door lock or unlock signal from the transmitter, the remote control door lock receiver sends a message to the BCM via serial data to perform the appropriate arm/disarm functions.

Security Indicator

The security LED is illuminated on the upper I/P by the BCM. The content theft deterrent system uses the security LED to inform the driver of system status prior to arming.

Door Ajar Switches

The content theft deterrent system uses the door ajar switches as a status indicator to activate the alarm. The door ajar switches are monitored by the body control module via a discrete input from each door ajar switch. If the BCM receives a signal indicating a door is opened when the content theft deterrent system is armed, the BCM activates the alarm.

Hood Ajar Switch

The content theft deterrent system uses the hood ajar switch as a status indicator to activate the alarm. The BCM monitors the hood ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the hood has been opened when the content theft deterrent system is armed, the BCM activates the alarm.

Liftgate Ajar Switch

The content theft deterrent system uses the liftgate ajar switch as a status indicator to activate the alarm. The BCM monitors the liftgate ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the liftgate has been opened when content theft deterrent system is armed, the BCM activates the alarm.

Intrusion Sensor

The intrusion sensor is located in the overhead console and uses two ultrasonic sensors to detect any motion inside the vehicle. If motion is detected inside the vehicle while the content theft deterrent system is armed, the system will transition to the alarm mode. The intrusion sensor also acts as an inclination sensor. The inclination sensor determines the vehicles level when the content theft deterrent system is armed. If the vehicle level is changed while the system is armed, such as being lifted by a tow truck or raised with a jack, the alarm will be activated. The intrusion sensor can be disabled using the intrusion sensor disable switch. The intrusion sensor disable switch also shows the intrusion sensor status using a status LED.

Glass Breakage Sensor

The glass breakage sensors (if equipped) are located on the rear side windows and are supplied battery voltage at all times. The BCM monitors the glass breakage sensor signal circuit. If the rear side glass is broken, the glass breakage sensor signal circuit will open and the BCM will enter the alarm mode.

Alarm Siren

The content theft deterrent system uses the alarm siren as an audible alert device to alert individuals near the vehicle that a vehicle intrusion is occurring. The siren is supplied battery voltage and ground for operation and communicates with the body control module (BCM) via a dedicated LAN circuit.

Inputs

The BCM monitors the following inputs for content theft deterrent:

- Door ajar switches
- Keyless entry transmitter LOCK/UNLOCK buttons; a message from the remote control door lock receiver
- Immobilizer status—The BCM uses the immobilizer status for disarming the system or silencing an alarm when the correct vehicle key is used to start the vehicle
- Liftgate ajar switch
- Hood ajar switch
- Intrusion sensor
- Glass breakage sensor

Outputs

The BCM controls the following for content theft deterrent:

- Horn relay
- Exterior lamps
- Alarm siren

Section 10

Seats

Power Seats **10-2**

Schematic and Routing Diagrams **10-2**

Driver Seat Schematics 10-3

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Lumbar Support Description and Operation 10-8

Memory Seats Description and Operation 10-8

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Seat Heating and Cooling **10-12**

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Heated/Cooled Seat Schematics 10-13

Description and Operation **10-15**

Heated/Vented Seat Description and Operation 10-15

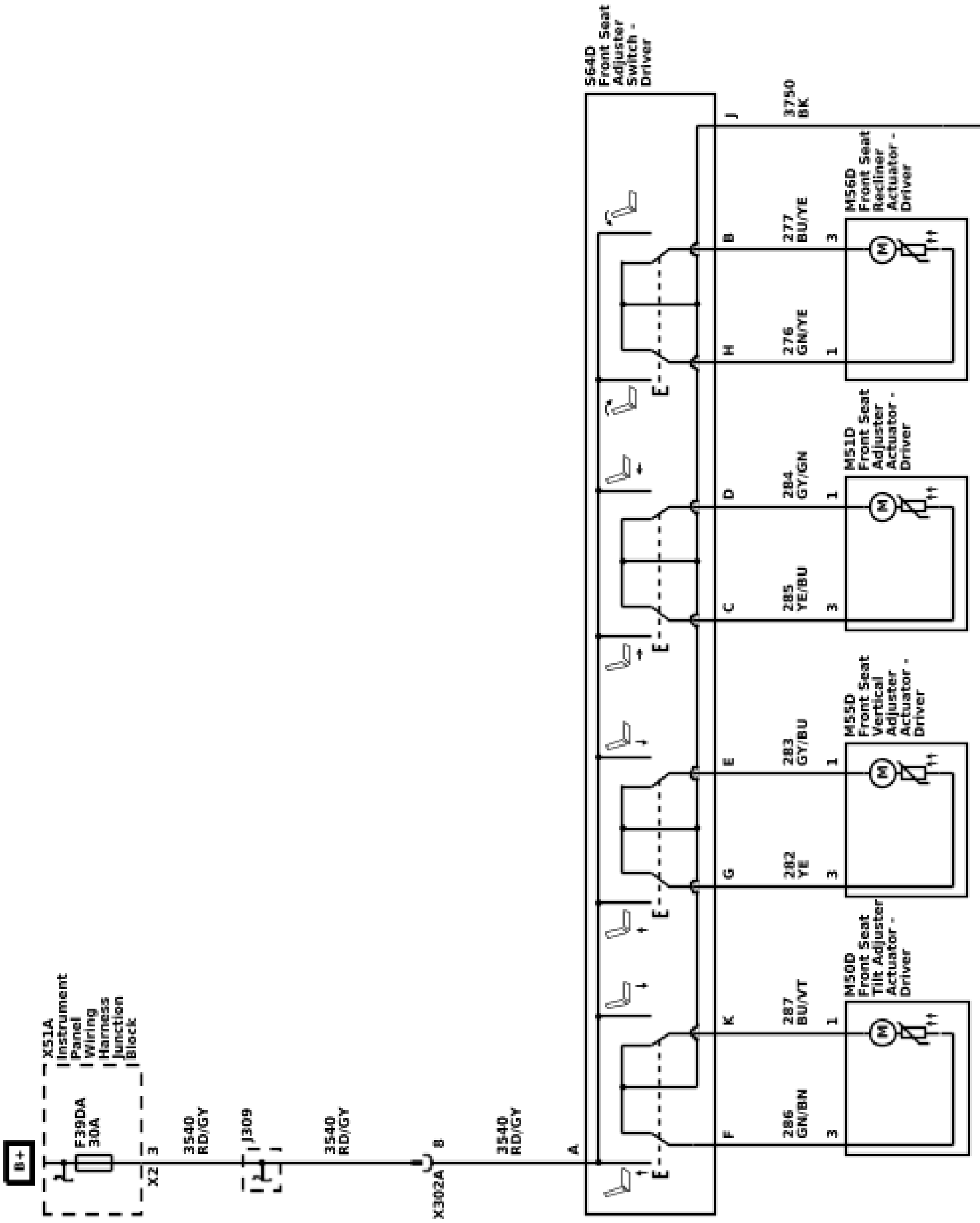
Seats

Power Seats

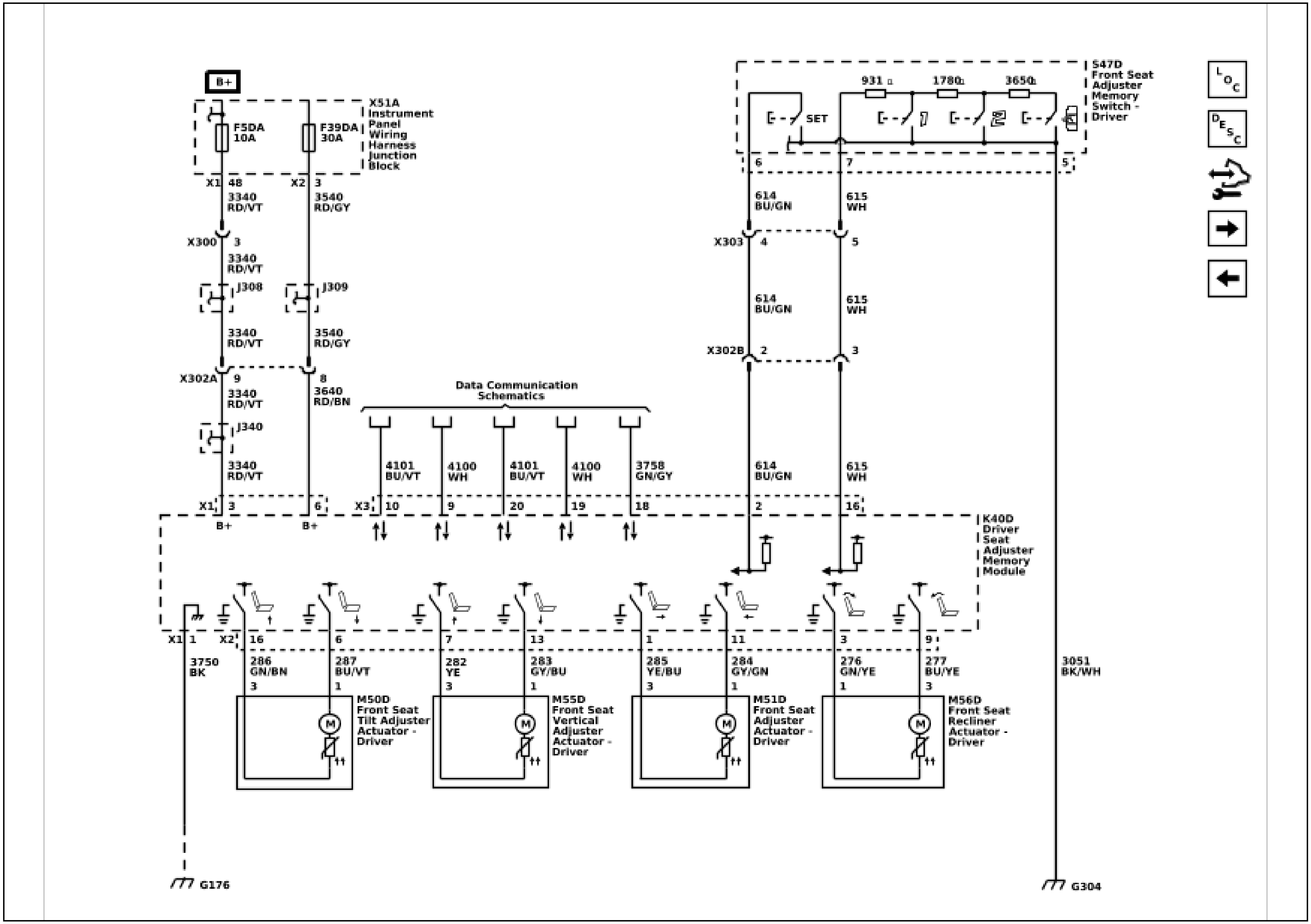
Schematic and Routing Diagrams

Driver Seat Schematics (Power Seat (A2X - A45))

6852989

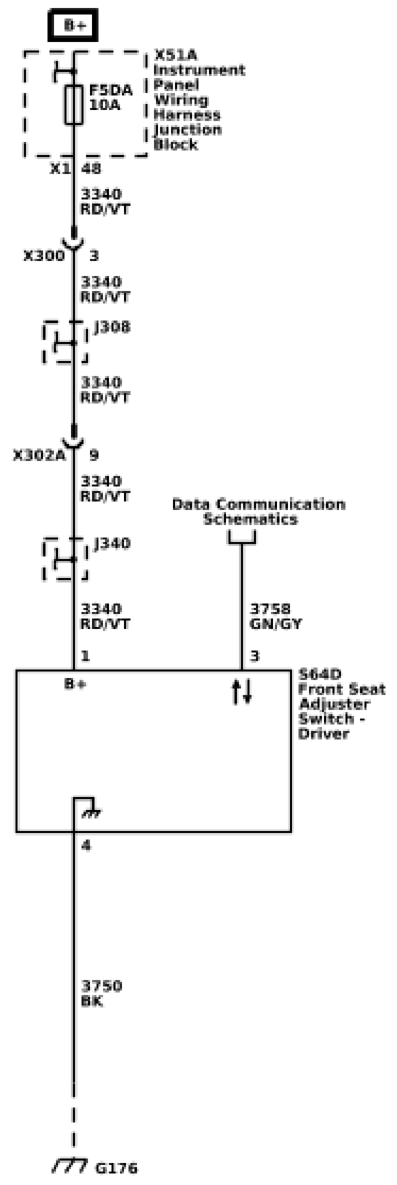

B+
X51A Instrument Panel Wiring Harness Junction Block
F39DA 30A
X2 3
3540 RD/GY
J309
3540 RD/GY
X302A 8
3540 RD/GY
A
S64D Front Seat Adjuster Switch - Driver
J
3750 BK
G176
F
286 GN/BN
3
K
287 BU/VT
1
M50D Front Seat Tilt Adjuster Actuator - Driver
G
282 YE
3
E
283 GY/BU
1
M55D Front Seat Vertical Adjuster Actuator - Driver
C
285 YE/BU
3
D
284 GY/GN
1
M51D Front Seat Adjuster Actuator - Driver
H
276 GN/YE
1
B
277 BU/YE
3
M56D Front Seat Recliner Actuator - Driver
M

Driver Seat Schematics (Module Power, Ground, Serial Data, Motors, and Memory Controls (A45))


B+
F5DA
10A
F39DA
30A
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
X1 48
3340
RD/VT
X2 3
3540
RD/GY
X300 3
3340
RD/VT
J308
J309
3340
RD/VT
3540
RD/GY
X302A 9
3340
RD/VT
8
3640
RD/BN
J340
3340
RD/VT
Data Communication
Schematics
4101
BU/VT
4100
WH
4101
BU/VT
4100
WH
3758
GN/GY
X1 3
B+
6
B+
X3 10
9
20
19
18
2
16
S47D
Front Seat
Adjuster
Memory
Switch -
Driver
931 Ω
1780Ω
3650Ω
SET
1
2
6
7
5
614
BU/GN
615
WH
X303 4
5
614
BU/GN
615
WH
X302B 2
3
614
BU/GN
615
WH
K40D
Driver
Seat
Adjuster
Memory
Module
X1 1
X2 16
6
7
13
1
11
3
9
3750
BK
286
GN/BN
3
287
BU/VT
1
282
YE
3
283
GY/BU
1
285
YE/BU
3
284
GY/GN
1
276
GN/YE
1
277
BU/YE
3
M
M50D
Front Seat
Tilt Adjuster
Actuator -
Driver
M55D
Front Seat
Vertical
Adjuster
Actuator -
Driver
M51D
Front Seat
Adjuster
Actuator -
Driver
M56D
Front Seat
Recliner
Actuator -
Driver
3051
BK/WH
G176
G304
L O C
D E S C

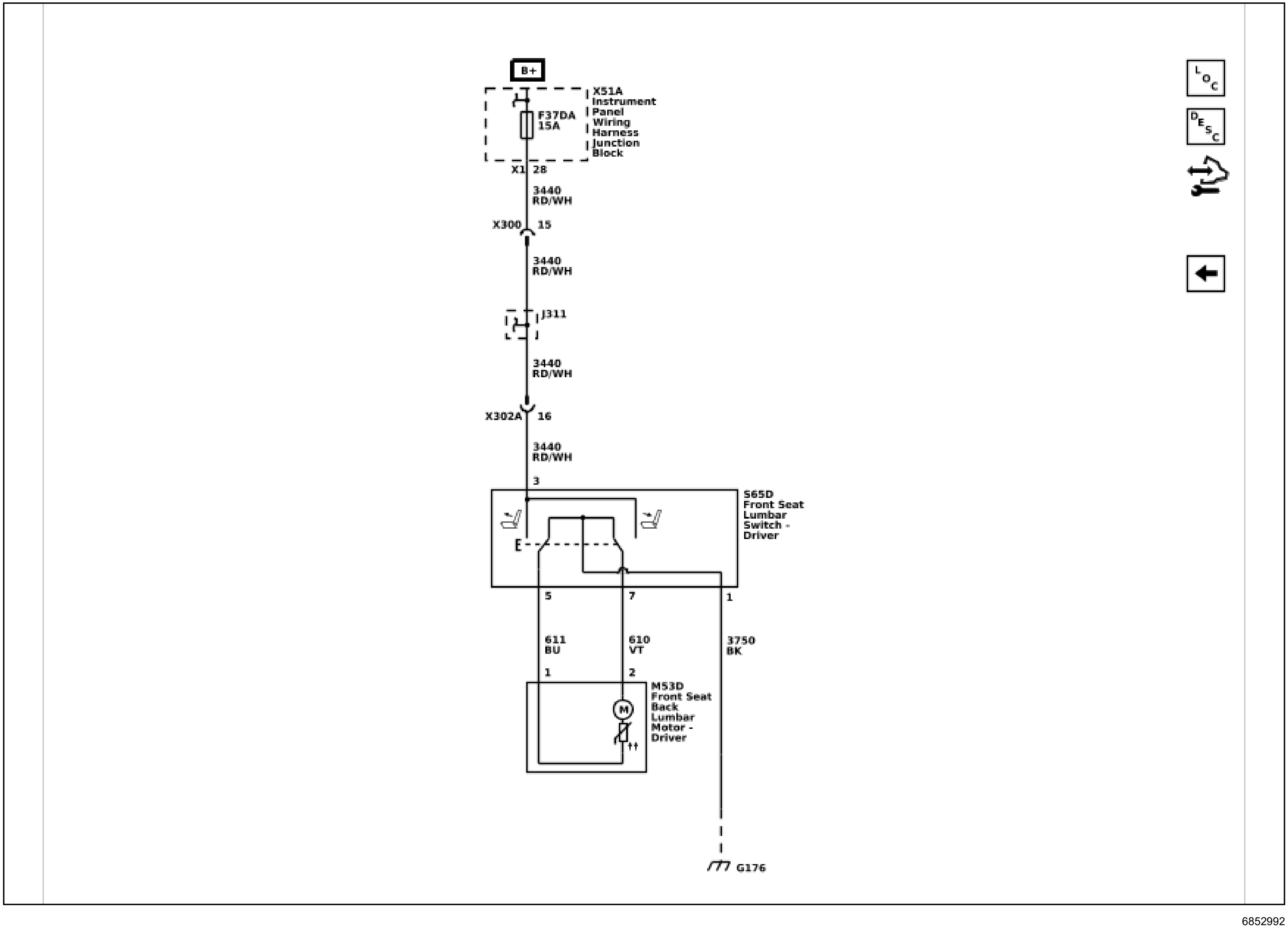
6852990

Driver Seat Schematics (Seat Adjuster (A45))

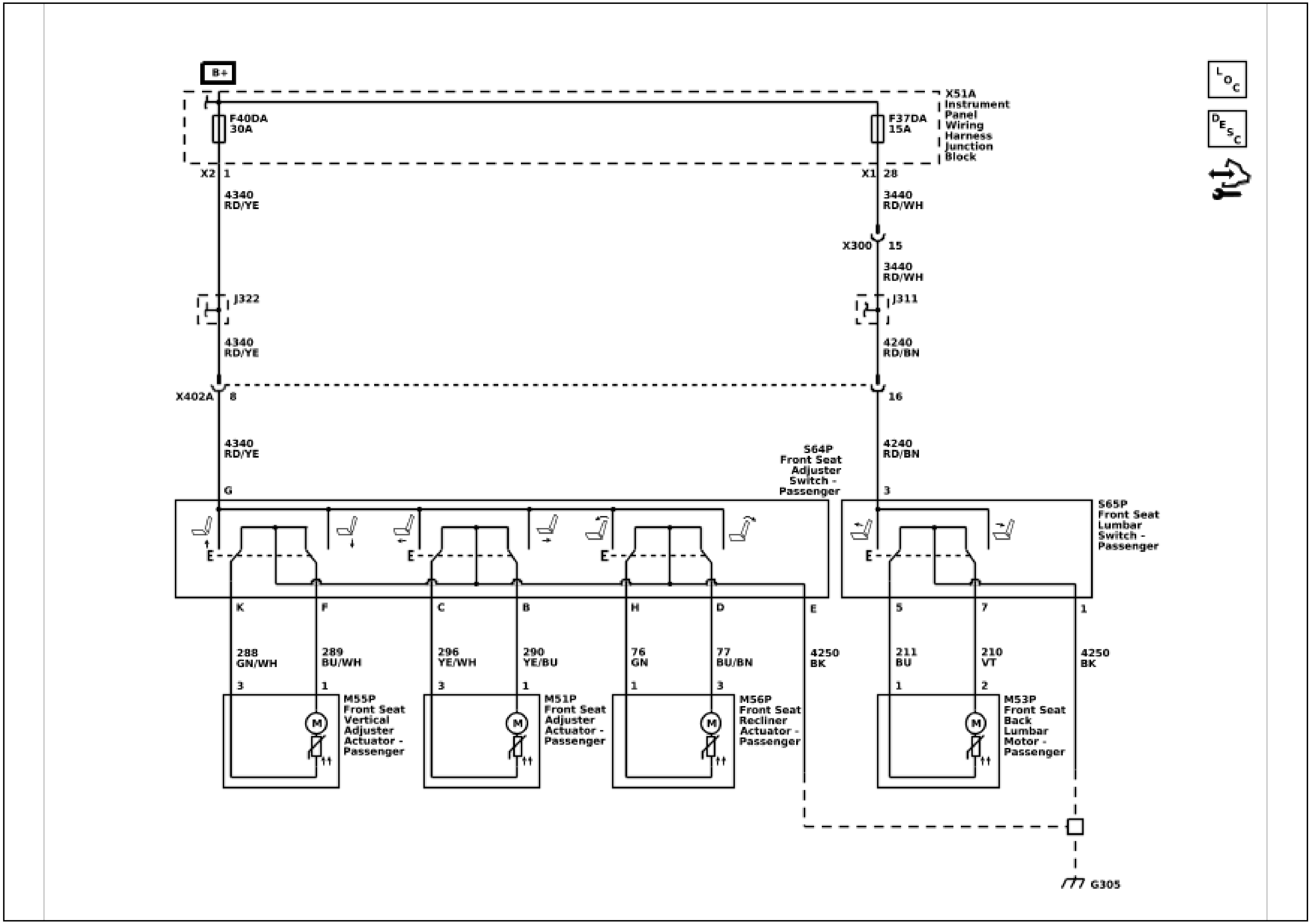

B+
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
F5DA
10A
X1 48
3340
RD/VT
X300 3
3340
RD/VT
J308
3340
RD/VT
X302A 9
3340
RD/VT
J340
3340
RD/VT
Data Communication
Schematics
3758
GN/GY
1
3
B+
S64D
Front Seat
Adjuster
Switch -
Driver
4
3750
BK
G176

6852991

Driver Seat Schematics (Seat Lumbar/Bolster (A2X))


B+
X51A Instrument Panel Wiring Harness Junction Block
F37DA 15A
X1 28
3440 RD/WH
X300 15
3440 RD/WH
J311
3440 RD/WH
X302A 16
3440 RD/WH
3
S65D Front Seat Lumbar Switch - Driver
E
5
7
1
611 BU
610 VT
3750 BK
1
2
M53D Front Seat Back Lumbar Motor - Driver
M
G176
6852992

Passenger Seat Schematics (Power Seat (A7J))


B+
X51A Instrument Panel Wiring Harness Junction Block
F40DA 30A
F37DA 15A
X2 1
X1 28
4340 RD/YE
3440 RD/WH
X300 15
3440 RD/WH
J322
J311
4340 RD/YE
4240 RD/BN
X402A 8
16
4340 RD/YE
4240 RD/BN
G
3
S64P Front Seat Adjuster Switch - Passenger
S65P Front Seat Lumbar Switch - Passenger
E
E
E
E
K
F
C
B
H
D
E
5
7
1
288 GN/WH
289 BU/WH
296 YE/WH
290 YE/BU
76 GN
77 BU/BN
4250 BK
211 BU
210 VT
4250 BK
3
1
3
1
1
3
1
2
M
M
M
M
M55P Front Seat Vertical Adjuster Actuator - Passenger
M51P Front Seat Adjuster Actuator - Passenger
M56P Front Seat Recliner Actuator - Passenger
M53P Front Seat Back Lumbar Motor - Passenger
G305
6853081

Description and Operation

Lumbar Support Description and Operation

The seat lumbar support system includes to following components:

- Seat lumbar support switch
- Seat Back Lumbar Pump
- Air bladders

The driver and passenger seat switches are bidirectional. The switches are normally grounded, and switched to voltage when a switch is pressed. When a lumbar switch is pressed, the appropriate seat back lumbar pump control circuit is pulled high, supplying battery voltage to the lumbar pump. The pump runs to inflate the appropriate support bladder until the switch is released. The seat bladder will either inflate or deflate depending upon requested function.

Refer to the Owner’s Manual for more information regarding the seat lumbar support functions.

Memory Seats Description and Operation

The memory seat system consists of the following components:

- Driver seat adjuster switch
- Driver seat memory switch
- Seat memory control module
- Driver seat horizontal motor
- Driver seat front vertical motor
- Driver seat rear vertical motor
- Driver seat recline motor

Driver Seat Adjuster Switch

Ground is supplied at all times to the seat adjuster switch. Battery positive voltage is supplied at all times to the seat adjuster switch through a 10 A fuse located in the fuse block. When the seat adjuster switches are pressed, the appropriate signal message is sent to the seat memory control module, via a LIN message. The seat memory control module then commands the appropriate seat motor to move in response to the switch signal message.

Seat Memory Control Module Power and Grounds

Battery positive voltage is supplied at all times to the seat memory control module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the seat memory control module through a 10 A fuse located in the fuse block.
This voltage is used to power up the module. Ground is provided to the seat memory control module through the module ground circuit and ground connection.

Seat Motors

There are 4 motors that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The seat memory control module controls all seat motors via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The seat memory control module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat motors are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the seat adjuster switch to the seat memory control module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs to drive the entire seat forward until the switch is released, the motor reaches the end of travel, or an obstruction prevents further seat movement. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the motors are powered this way.

Position Detection

Note: There are no physical position sensors used to detect the seat position and movement.

To monitor the seat position, the seat memory control module counts the electrical pulses of each seat motor. During seat motor operation, the electrical pulses are counted and the direction of the seat movement is monitored to determine the seat position.

The seat memory control module determines seat position by keeping a running counter where movement in the forward/upward direction adds counts and movement in the rearward/down direction subtracts counts.

The value of these counters, which represent seat positions, are stored in memory for future seat memory recall operation. During a memory seat position recall, the seat memory control module moves the seat in such a way to return it the stored counter value.

Memory Functions

Note: The seat memory control module does not store the mirror, column, MBM, or HUD positions. The seat memory control sends a serial data messages to the respective modules to recall their locally stored memory position.

In all power modes except crank, memory recalls can be initiated by pressing and holding one of the memory position buttons until the seat reaches the stored memory position associated with the activated button. This is called a supervised recall.

The driver seat memory switch is supplied ground at all times. The seat memory control module supplies set and memory recall signal circuits to the seat memory switch. When a memory recall switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and a series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Refer to the Owner’s Manual for storing memory positions.

Seat Entry Memory Recall and Seat Exit Memory Recall

The seat memory control module will not perform Seat Entry Memory Recall and Seat Exit Memory Recall functions unless these options are enabled in vehicle personalization using the radio/HVAC controls.

Refer to Instruments and Controls/Vehicle Personalization in the Owner’s Manual for the following memory personalization options:

- Seat Entry Memory Recall
- Seat Exit Memory Recall

The radio/HVAC controls reports the seat memory recall option settings to the seat memory control module via serial data message. The module will then store the memory recall option setting and examine it before making a memory seat adjustment. The seat memory recall option setting stored within the module will not change until the seat memory recall option setting in vehicle personalization is changed.

Memory Store and Recall Conditions

Note: Memory function requires a position be saved to the activated memory switch that is being recalled.

Memory Store Preconditions:

- RUN power mode
- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2

Memory Recall Preconditions:

- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2
- LIN communications Active

- Not currently performing a memory store
- A position has been saved to the recalled memory position

Memory Recall Termination Conditions:

- Precondition no longer met
- Active memory button changed
- Recall completed
- Exceed the max allowed recall time (30 seconds)
- OTA Programming Requested

Auto Memory Recall Preconditions:

Note: Auto Memory Recall is suspended during Start power mode.

- Valid Memory ID and Driver ID
- Valid Power Mode
- No Active or Stuck Switches
- No SIR disable
- Vehicle is Stopped
- No Load Shed 3
- No ASIL – A output fault detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- A position has been saved to the recalled memory position
- Enabled for Current Driver

Auto Memory Recall Termination Conditions:

- Precondition no longer met, except being Parked
- Exceed any recall completion times
- Vehicle On terminates Seat Exit Memory
- Vehicle Off terminates Seat Entry Memory
- OTA Programming Requested

Memory Recall Termination Data Displays:

The termination causes can be viewed through the Seat Memory Recall History data displays. The following are possible memory recall termination causes:

- No Recall Requested
- Seat Entry/Exit Recall Completed
- Memory Button 1 Recall Initiated
- Memory Button 1 Recall Completed
- Memory Button 2 Recall Initiated
- Memory Button 2 Recall Completed
- Memory Button Exit Recall Initiated
- Memory Button Exit Recall Completed
- Terminated by Other then following
- Memory switch stuck or Invalid
- Memory Switch (Not including SET) out of Range
- Memory SET switch Active or 1, 2, Exit switch changed
- Seat Switch Active or Stuck
- Mirror Switch Active or Stuck
- HUD Switch Active or Stuck
- No Position 1 stored
- No Position 2 Stored
- No Position Exit Stored
- Load Shed 3
- Sir Disabled
- Limit Switch Active or Fault
- Seat Entry – Not Parked terminated
- Invalid Power Mode
- Seat Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Control Fault
- Seat Rear Up/Down Motor Control Fault
- Recline Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Position Fault
- Seat Rear Up/Down Motor Position Fault
- Recline Forward Rearward Motor Position Fault

Power Seats System Description and Operation

The driver and passenger power seat systems each consist of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor (If Equipped)
- Seat rear vertical motor
- Seat recline motor

Seat Motors

The seat switches provide both power and ground to the selected seat motors.

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are four seat position motors and two lumbar motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The seat horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

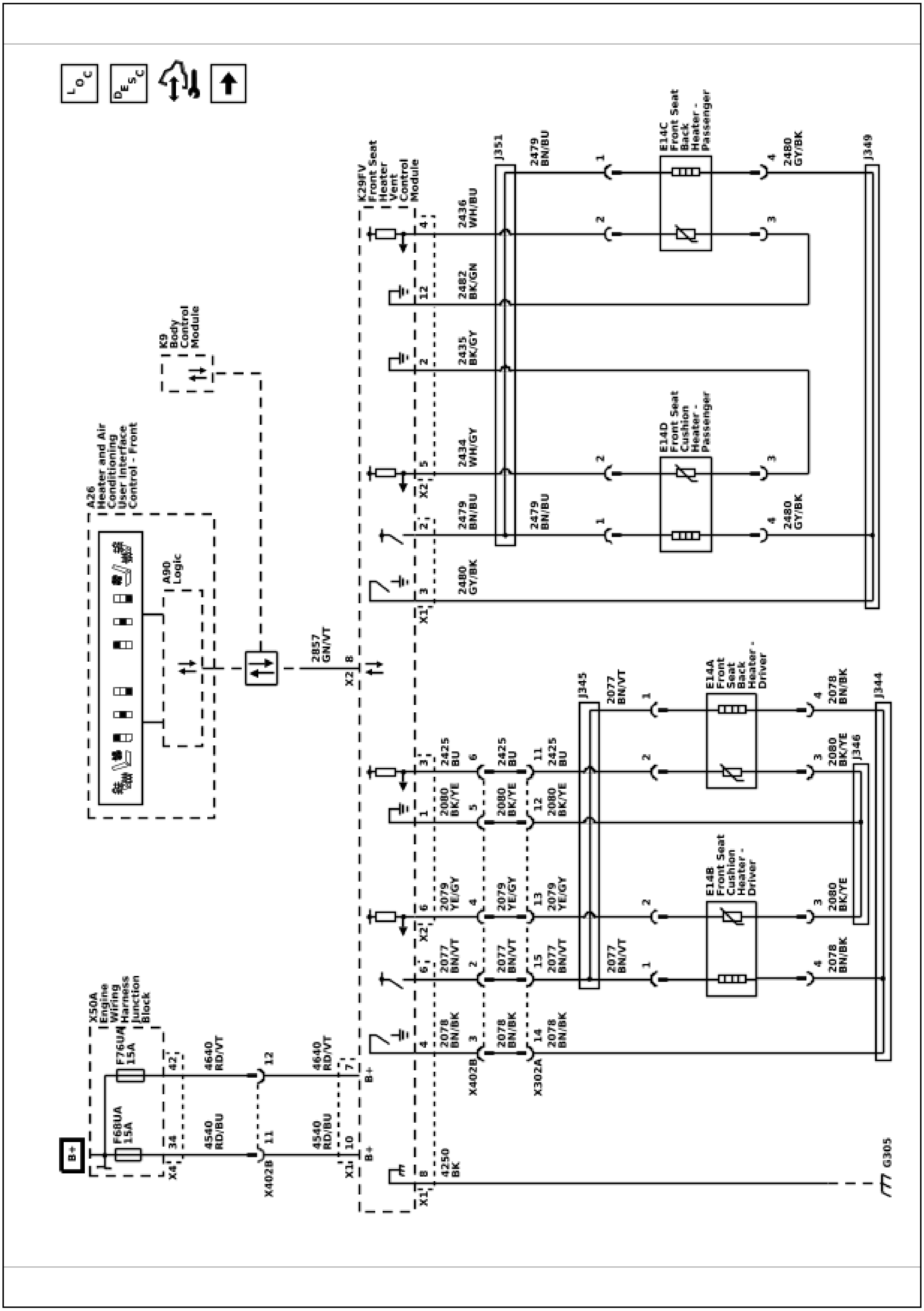
Seat Operation

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch ground circuit, the motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

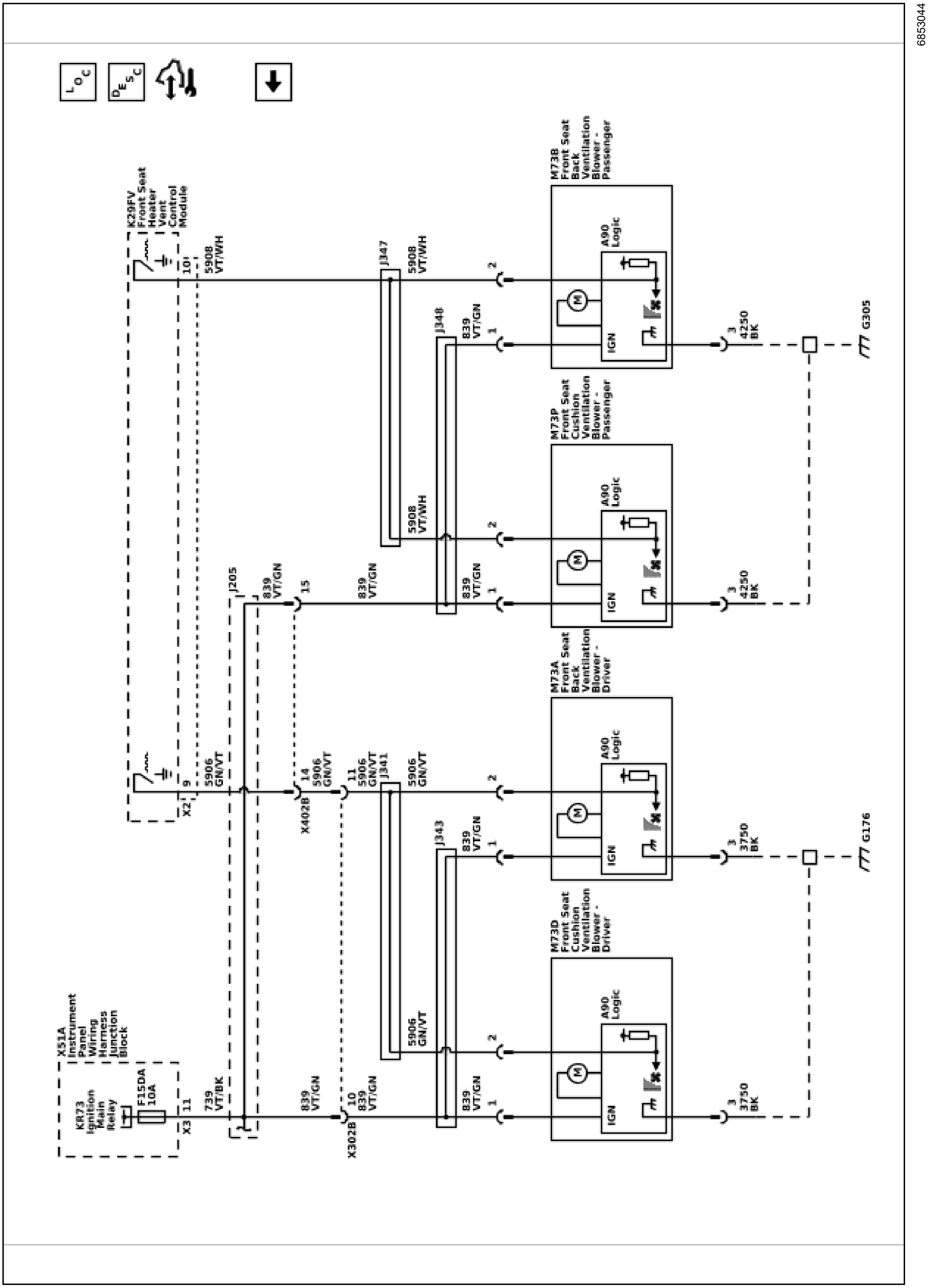
Seat Heating and Cooling

Schematic and Routing Diagrams

Heated/Cooled Seat Schematics (Heated Seats (KA1))


6853043
B+
X50A Engine Wiring Harness Junction Block
F68UA 15A
F76UA 15A
X4 34
42
4540 RD/BU
4640 RD/VT
X402B 11
12
X1 10
7
B+
A26 Heater and Air Conditioning User Interface Control - Front
A90 Logic
K9 Body Control Module
2857 GN/VT
X2 8
K29FV Front Seat Heater Vent Control Module
X1 8
4250 BK
G305
2078 BN/BK
2077 BN/VT
2079 YE/GY
2080 BK/YE
2425 BU
X402B
X302A
J345
J344
J346
E14A Front Seat Back Heater - Driver
E14B Front Seat Cushion Heater - Driver
2480 GY/BK
2479 BN/BU
2434 WH/GY
2435 BK/GY
2482 BK/GN
2436 WH/BU
J351
J349
E14C Front Seat Back Heater - Passenger
E14D Front Seat Cushion Heater - Passenger

Heated/Cooled Seat Schematics (Vented Seats (KU9))


6853044
LOC
DESC
K20FV Front Seat Heater Vent Control Module
10
5908 VT/WH
9
X2
5906 GN/VT
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F15DA 10A
X3 11
739 VT/BK
J205
839 VT/GN
15
14
X402B
10
X302B
11
J341
J343
J347
J348
M73B Front Seat Back Ventilation Blower - Passenger
M73P Front Seat Cushion Ventilation Blower - Passenger
M73A Front Seat Back Ventilation Blower - Driver
M73D Front Seat Cushion Ventilation Blower - Driver
A90 Logic
M
IGN
1
2
3
4250 BK
3750 BK
G305
G176

Description and Operation

Heated/Vented Seat Description and Operation

Heated and Vented Seat Components

The heated/vented seat system consists of the following components:

- Heated and vented seat switches
- Body control module
- Front seat heater control module
- Driver seat cushion heating element
- Driver seat cushion temperature sensor
- Driver seat back heating element
- Driver seat back temperature sensor
- Driver seat cushion blower motor
- Driver seat back blower motor
- Passenger seat cushion heating element
- Passenger seat cushion temperature sensor
- Passenger seat back heating element
- Passenger seat back temperature sensor
- Passenger seat cushion blower motor
- Passenger seat back blower motor

Heated/Vented Seat Switches

The driver and passenger heated and vented seat switches are located near the HVAC controls on the center stack. The BCM is the heated and vented seat system master. It monitors heated/vented seat switch activations to determine user requested operating mode. Based on the requested operating mode, the BCM sends a LIN Bus serial data message to the front seat heater control module how to drive the self-regulated heating pads or ventilation motors. The BCM also controls the indicators used to provide the operator with feedback as to the operating status of the system. With each press of the switch, the system will cycle through High, Medium, Low, and then back to Off again. The BCM also controls the seat temperature and mode indicators, via the serial data line, used to provide the operator with feedback as to the operating status of the system.

Heated Seat Operation

The front seat heater control module controls heated seat operation for the driver and passenger seats. When active, power is applied to the seat cushion and back heater elements through a common pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a common low side drive control circuit.

When inactive the front seat heater control module connects the heating element low side outputs to a common reference point internal to the module which is biased to approximately 3.5 V. The module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling the driver and passenger seat heating elements. During heated seat operation, the front seat heater control module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

With both the seat cushion and seat back heater elements disconnected, if the high side output of the module is measured it will display a low current 12 V bleed off voltage. This bleed off voltage does not have a meaningful diagnostic purpose. With one or both of the heater elements connected you would just see the 3.5 V biased voltage from this circuit.

Temperature Regulation

The seat back and cushion temperature sensors (thermistors) are packaged with the seat heating elements located just under the seat covers. The front seat heater control module supplies each temperature sensor with a 5 V reference signal circuit and a low reference circuit. The module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

If the heated seats are on high, the temperature level may automatically be lowered after approximately 30 min of operation.

Vented Seat Operation

Each vented seat consists of 2 blower motors, one in the seat back and one in the seat cushion. During vented seat operation, the vented seat blower motors draw cabin air in through channels in the foam pad and small holes in the seat covers to pull heat away from the occupant.

When the front seat heater control module receives a ventilation seat command, it sends a low side drive pulse width modulation (PWM) signal through the blower motor control circuit to the seat back and cushion blower motors indicating the seat ventilation command. The logic in the blower motors sets the blower speed to the switch set point. The blower motors run causing a cooling effect to the occupant.

Auto Heated Seat Operation with Vehicle ON

Refer to Heated and Ventilated Front Seats and Vehicle Personalization in the Owner’s Manual for information regarding Auto Heated and Ventilation Seat operation.

Heated and Cooled Seat Operation During Remote Start

Refer to Vehicle Personalization in the Owner’s Manual for Remote Start Auto Heated and Ventilation Seats.

During remote start, the heated seats will turn ON when the ambient temperature is below 10° C (50° F).

During remote start, the seat ventilation system will turn ON when the ambient temperature is above 27° C (80° F).

Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to *Electrical Power Management Description and Operation 5-71*.

Section 11

Steering

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Steering Wheel and Column Description and Operation 11-7

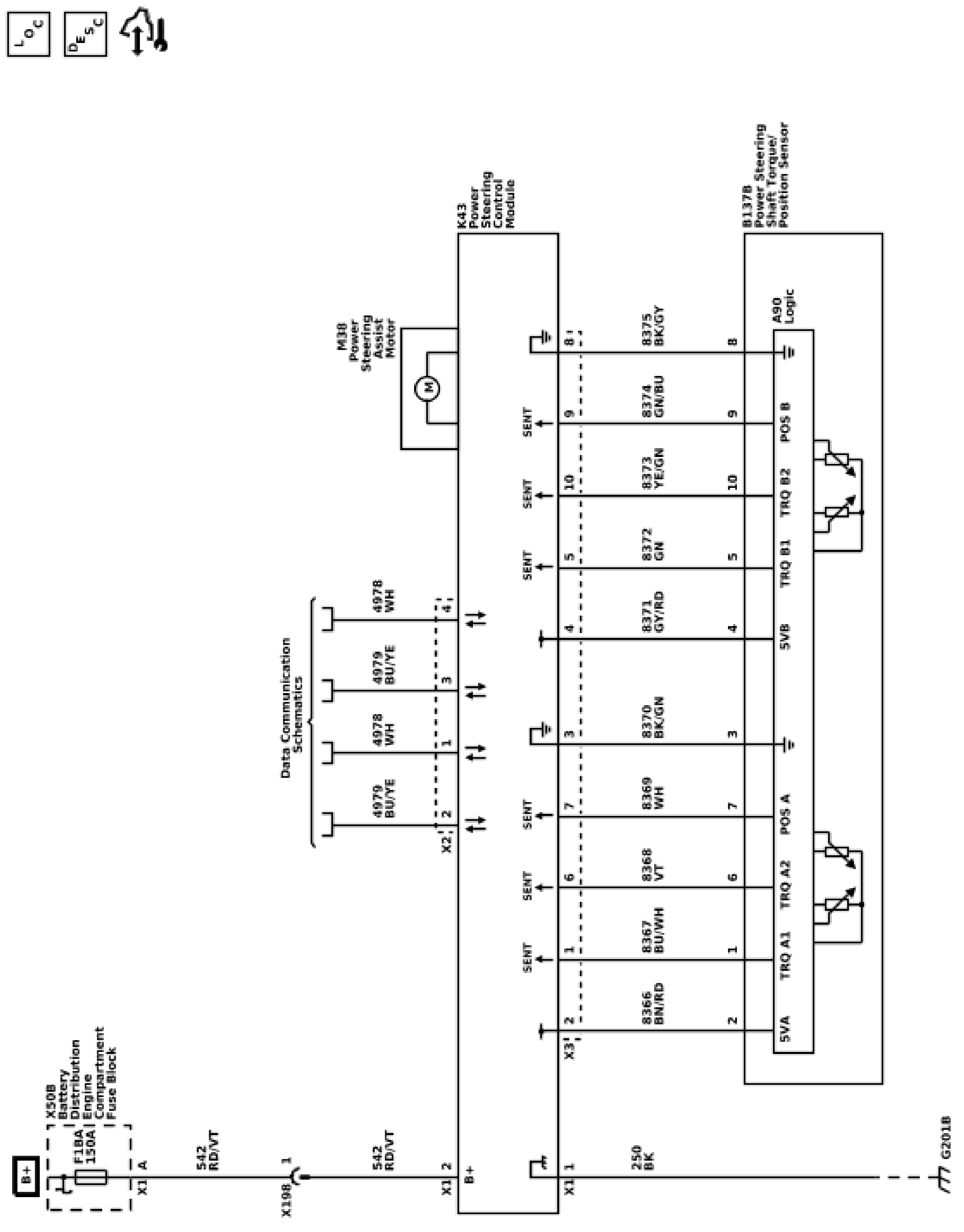
Steering

Power Steering

Schematic and Routing Diagrams

Power Steering Schematics (Electric Power Steering)

6853118


LOC
DESC
B+
X50B Battery Distribution Engine Compartment Fuse Block
F18A 150A
X1 A
542 RD/VT
1
X198
542 RD/VT
X1 2
B+
K43 Power Steering Control Module
X1 1
250 BK
G201B
M38 Power Steering Assist Motor
M
Data Communication Schematics
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
X2 2
1
3
4
X3 2
1
6
7
3
4
5
10
9
8
SENT
8366 BN/RD
8367 BU/WH
8368 VT
8369 WH
8370 BK/GN
8371 GY/RD
8372 GN
8373 YE/GN
8374 GN/BU
8375 BK/GY
B137B Power Steering Shaft Torque/Position Sensor
A90 Logic
5VA
TRQ A1
TRQ A2
POS A
5VB
TRQ B1
TRQ B2
POS B

Description and Operation

Power Steering System Description and Operation

The belt driven electronic power steering system consists of the following components:

- A belt drive and a ball nut mechanism
- A power pack; containing the power steering control module, its sensors, the power steering motor
- A torque sensor
- The steering gear (rack and pinion)

The belt driven electric power steering system reduces the amount of effort needed to steer the vehicle by utilizing the power steering control module to control the power steering motor to maneuver the steering rack. The power steering control module uses input from the torque sensor, motor rotational sensor, battery voltage circuit and CAN 2 serial data circuit to determine the level of motor assist. Vehicle speed and engine speed from the CAN 2 serial data circuit is also used to adjust the amount of steering assist needed to steer the vehicle. At low speeds more assist is provided for easy turning during parking maneuvers. At higher speeds less assist is provided for improved road feel and directional stability

To account for mechanical wear in the steering gear, the electronic power steering system contains a feature called Center Compensation. The power steering control module learns the amount of friction contained within the steering gear and as parts begin to wear mechanically, it will add torque compensation to maintain the original feel of the steering gear.

The torque sensor is attached to the steering gear housing near the input shaft, and is critical to proper operation of the electronic power steering system. As the steering wheel is turned and torque is applied to the steering shaft, the torque sensor monitors the amount of input torque.

The power steering control module responds to the torque sensor and motor rotational sensor by commanding current to the power steering motor.

The power steering control module and motor are attached to the base of the steering gear housing, and applies power assist through the belt drive and ball nut mechanism to the steering rack. The ball nut mechanism translates the rotational movement of the belt drive system to lateral movement of the steering rack. The power steering control module has the ability to detect malfunctions within the electric power steering system. Any malfunction detected that disables steering assist will cause the SERVICE POWER STEERING message to be displayed on the driver information center. Additionally, the power steering control module calculates an internal system temperature which is used to protect the power steering system from damage caused by high temperature. When the calculated temperature exceeds a pre-determined level the amount of current commanded to the power steering motor is reduced. This will result in a temporary reduced level of assist. Full assist will return once the calculated temperature drops below the pre-determined level.

Lead and Pull Compensation will actively learn and compensate for any offset in steering torque when driving straight down the road. This value needs to be reset in the scan tool after the following procedures:

- Wheel alignment
- New tires installed
- Any complaint of vehicle pulling in a direction

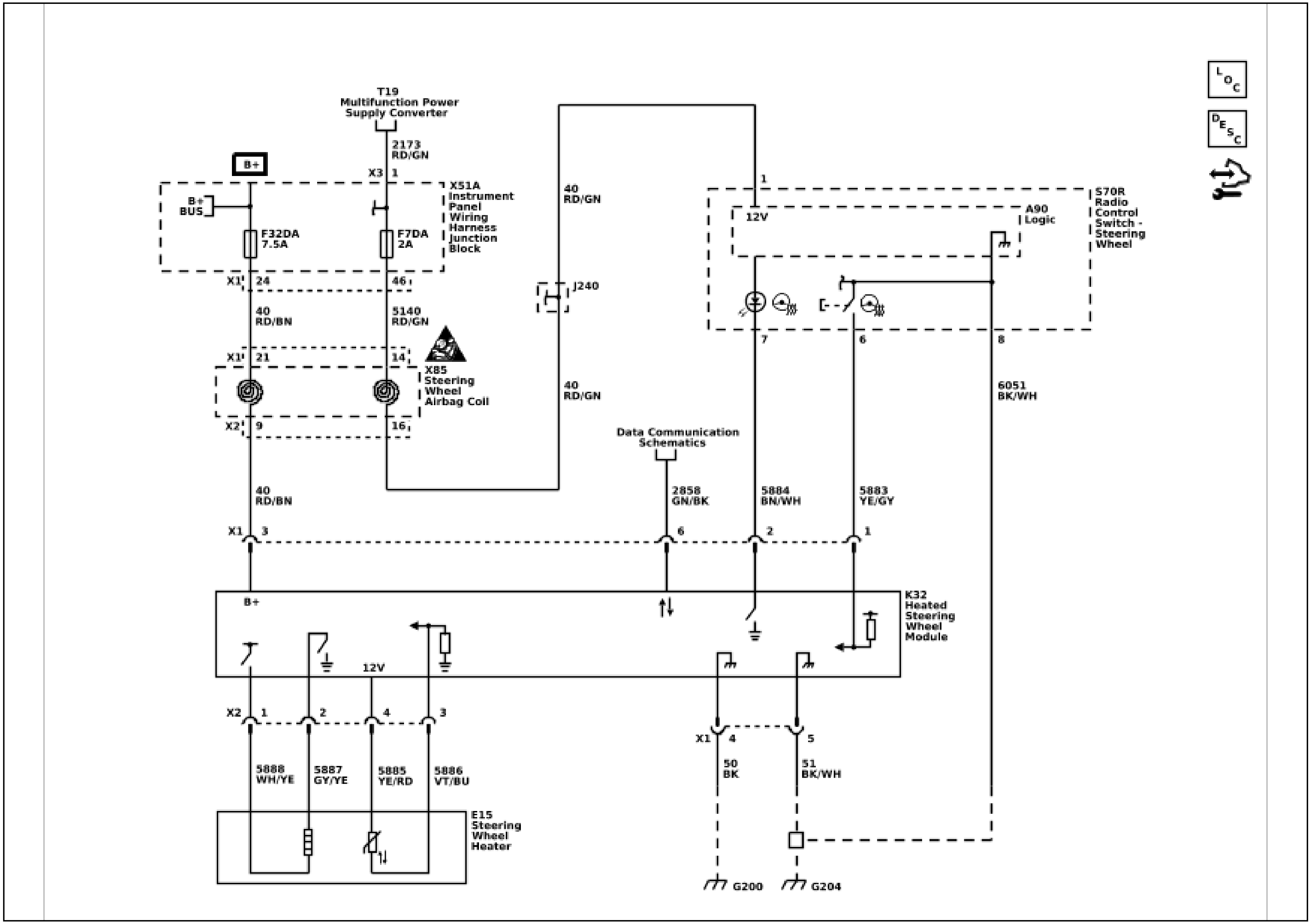
After reset the vehicle must power down for the changes to take place.

The power steering system contains two torque sensors and two steering angle sensors for redundancy in order to limit situations where total loss of assist occur. If a malfunction occurs in only one of the two sensors, the power steering system will continue to provide steering assist for a short period of time.

Steering Wheel and Column

Schematic and Routing Diagrams

Steering Wheel Schematics (Heated Steering Wheel (KI3))


T19
Multifunction Power
Supply Converter
2173
RD/GN
X3 1
B+
B+
BUS
X51A
Instrument
Panel
Wiring
Harness
Junction
Block
F32DA
7.5A
F7DA
2A
X1 24
46
40
RD/BN
5140
RD/GN
X1 21
14
X85
Steering
Wheel
Airbag Coil
X2 9
16
40
RD/BN
40
RD/GN
J240
40
RD/GN
Data Communication
Schematics
2858
GN/BK
5884
BN/WH
5883
YE/GY
X1 3
6
2
1
1
12V
A90
Logic
S70R
Radio
Control
Switch -
Steering
Wheel
7
6
8
6051
BK/WH
B+
K32
Heated
Steering
Wheel
Module
12V
X2 1
2
4
3
5888
WH/YE
5887
GY/YE
5885
YE/RD
5886
VT/BU
E15
Steering
Wheel
Heater
X1 4
5
50
BK
51
BK/WH
G200
G204
6853138

Description and Operation

Steering Wheel and Column Description and Operation

Column Lock (if equipped)

The Column Lock Module (CLM) controls the steering wheel theft deterrent lock function, which allows the column to be electronically locked. When a valid key is used to start the vehicle, the BCM recognizes this and will send the encrypted password to the CLM. The CLM will compare its own stored password to the encrypted password sent by the BCM. If the data matches, the steering column will be unlocked.

In order for the steering column to be locked the CLM has to see 3 inputs.

1. The BCM power mode is OFF.
2. The vehicle is stationary based on zero speed reported from all ABS wheel speed sensors.
3. The driver door is reported open by the BCM.

When the CLM receives these inputs, the steering column will be locked.

The CLM monitors the column lock system and will set DTC codes when the module detects malfunctions within the system. When a malfunction occurs the driver information center (DIC) will display the Service Column Lock Now message indicating DTC codes are set within the CLM. The immobilizer system will prevent vehicle starting if there is a fault or no communication with the CLM.

Tilt/Telescoping Description (if equipped)

The steering column has a tilt/telescoping control system that consists of an electronic control module capable of LIN message communication, a steering column power assembly with positioning actuators and sensors, and a steering column control switch.

Column Position Module has two versions of operation:

1. N38 – Power Steering Column-Tilt/Telescope, and A45 – Memory Seats

   The column position module will wake up either by the LIN bus or by the tilt/telescope steering column switch. The memory seat module is the master and column position module is the slave. All DTCs and the data from column position module are reported through the LIN bus and stored in the memory seat module.

2. N38 – Power Steering Column-Tilt/Telescope Only

   The column position module will wake up with the tilt/telescope steering column switch. No DTCs or data is available. Vehicle symptoms will cause the customer to bring the vehicle in for service.

Tilt/Telescoping Switch Operation

The tilt/telescope steering column has a four-position switch. The switch may be used to adjust the position of the steering wheel in or out which is telescope and up or down which is tilt. The position of the column may be changed as follows:

- Press the switch up to tilt the column up.
- Press the switch down to tilt the column down.
- Press the switch forward and the column moves toward the front of the vehicle.
- Press the switch rearward and the column moves toward the rear of the vehicle.

Actuators

Both the tilt and telescoping actuators are reversible. For example, the tilt actuator moves the column both up and down. When the column position module receives an input to move the column up, the column position module supplies battery positive voltage and ground to the tilt actuator in order to move the column up. When the column position module receives a column down input, the column position module supplies battery positive voltage and ground to the same actuator, but with reverse polarity. When the voltage polarity is reversed, the actuator runs in the opposite direction and moves the column down.

Position Sensors with A45 Memory Seats

Two position sensors are Hall Effect sensors and are used by the column position module. The column position module provides a 5 V reference voltage and a ground to both the tilt and telescoping position sensors. The sensor feedback circuit voltage varies from 0–5 V. Each sensor is part of the actuator assembly. When the actuator rotates, the voltage of the sensor varies on the scan tool. The column position module monitors the feedback voltage to determine the column position.

Without the A45 Memory Seat option, scan tool data is not available.

Tilt/Telescoping Memory with A45 Memory Seats
Memory settings and the personalization of steering wheel positions are available with the tilt/telescoping steering column only with the A45 Memory Seat option. The data stored consists of entry positions and exit positions. The entry position is the position that the steering column moves in when the ignition is turned ON. The exit position is the direction that the steering column moves in when the ignition is turned OFF and the driver's door is opened. The memory seat module stores memory positions and commands column position module to move actuators to specific positions through a LIN message.

An initial memory setting is set in the memory seat module at the assembly plant. This setting may be changed by the customer at any time.

Without the A45 Memory Seat option, memory settings, personalization, and the entry and exit function is not available.

Driver Safety

The steering wheel and column has safety features to protect the driver. The following components may be mounted on or near the steering column:

Energy-Absorbing Steering Column: The energy-absorbing steering column compresses in the event of a front-end collision, which reduces the chance of injury to the driver. The energy-absorbing feature, collapsible steering shaft, and break away mounting features help reduce the injury in the event of an accident.

Heated Steering Wheel (if equipped)

The heated steering wheel system consists of a heated steering wheel, a heated steering wheel switch, and a K32 Heated Steering Wheel Module. The heated steering wheel includes non-serviceable heating elements and a temperature sensor. The heating elements and sensor are located in the left and right sides of the rim of the steering wheel. The heated steering wheel switch is located in the left steering wheel control switch assembly. The steering wheel heat control module is located at the bottom of the steering wheel center hub. When the switch is pressed, the switch signal circuit is grounded and the heat module turns the heated steering wheel on. The system then remains on until the customer turns it off. The wheels normal operating temperature is 32°C (89.6°F). The wheel takes approximately 3 to 4 minutes to reach the normal operating temperature. The wheel will take longer to heat up if the vehicle temperature is below -21°C (-5.8°F). The built-in temperature sensor provides input to the controller to limit the temperature to the normal operating temperature. The wheel will not operate if the vehicle temperature is at or above 32°C (89.6°F).

The heated steering wheel control module is on the LIN bus. This allows the heated steering wheel to be activated during remote vehicle start.

For vehicles equipped with UKL, the K180S Driver Monitoring System Module controls the steering wheel heater, the steering wheel LED display and the steering wheel touch sensors. The K180S Driver Monitoring System Module - Steering Wheel is integral to the steering wheel and cannot be replaced by itself. The K180S Driver Monitoring System Module - Steering Wheel is also a LIN device to the K124 Image Processing Module.

Section 12

Transmission

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Description and Operation 12-23
Transfer Case Description and Operation 12-23

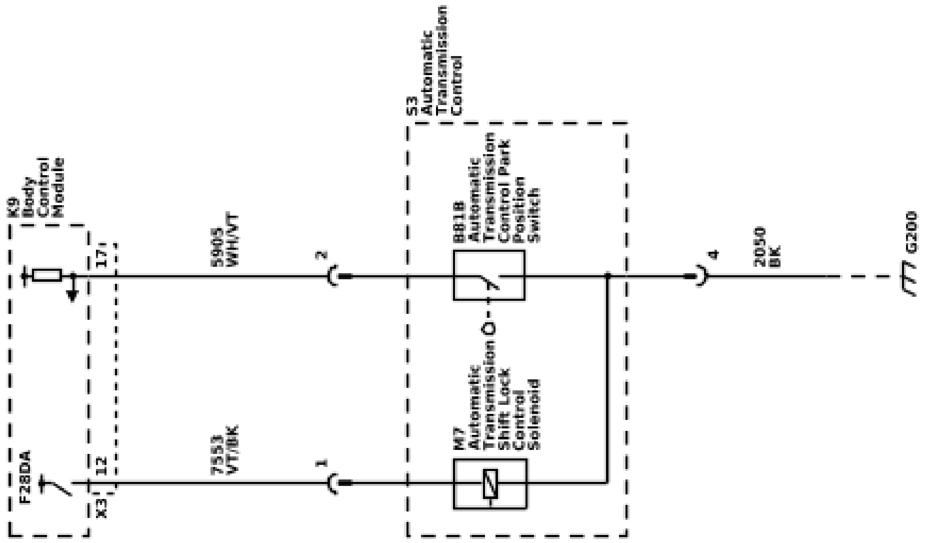
Transmission

Shift Lock Control

Schematic and Routing Diagrams

Shift Lock Control Schematics (Shift Lock Control)

6853130


K9
Body
Control
Module
F28DA
X3
12
17
5905
WH/VT
7553
VT/BK
2
1
S3
Automatic
Transmission
Control
B81B
Automatic
Transmission
Control Park
Position
Switch
M7
Automatic
Transmission
Shift Lock
Control
Solenoid
4
2050
BK
G200

Description and Operation

Automatic Transmission Shift Lock Control Description and Operation

The Automatic Transmission Shift Lock Control System is a safety device that prevents an inadvertent shift out of PARK when the engine is running. The driver must press the brake pedal before moving the shift lever out of the PARK position. The system consists of the following components:

- The Automatic Transmission Shift Lock Solenoid (serviced as the S3 Automatic Transmission Shift Lock Actuator)
- The Body Control Module (BCM)
- The Engine Control Module (ECM)

The BCM controls the voltage to the shift lock control solenoid though the shift lock control solenoid controlled voltage circuit. The following conditions must be met before the BCM will supply voltage to the shift lock control solenoid:

- The ignition is in the ON position.
- The ECM sends an input via GMLAN serial data to the BCM when the Transmission Control Module (TCM) indicates the transmission is in the PARK position.
- The BCM receives a brake applied input from the stop lamp switch.

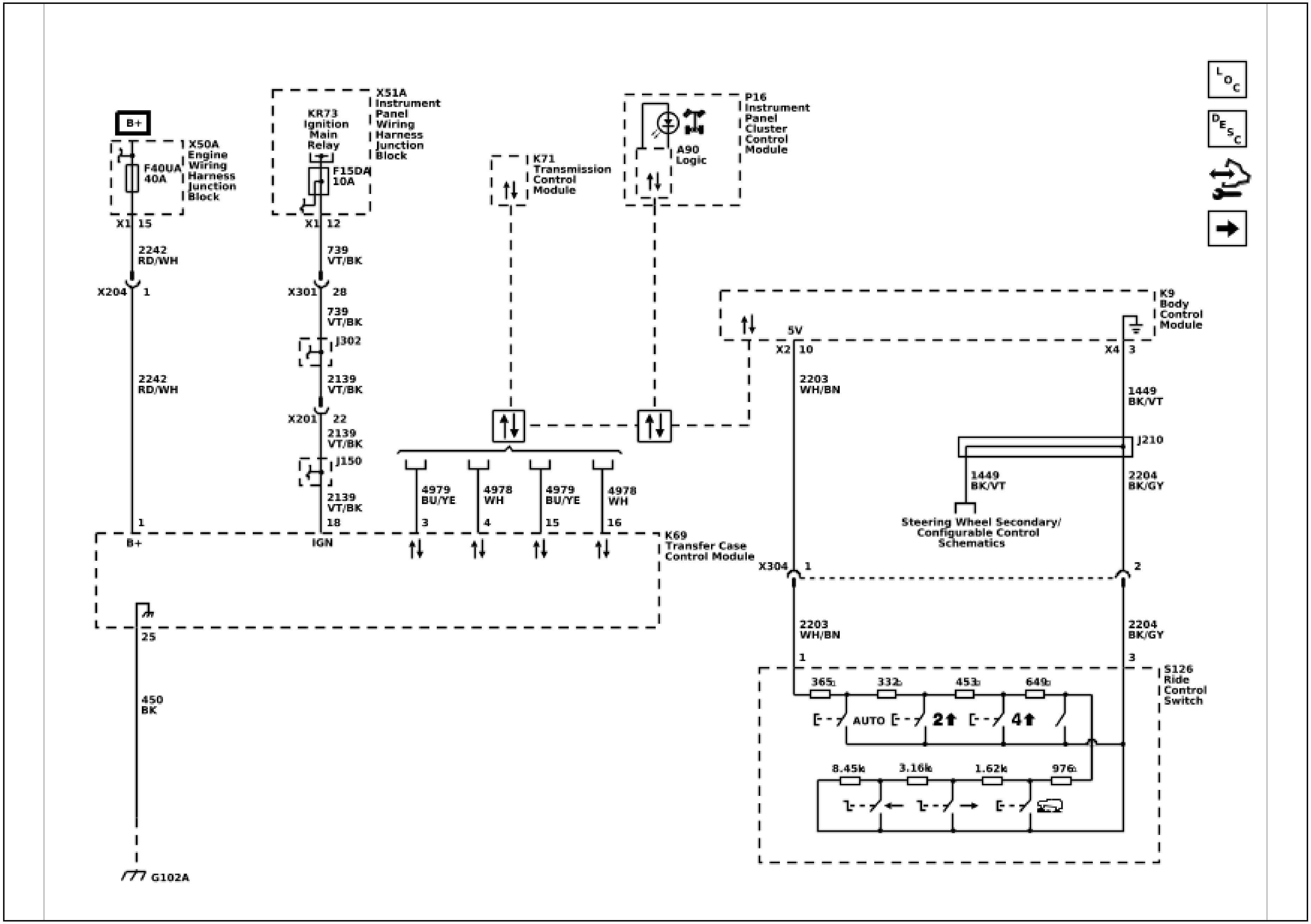
Since the shift lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission shift lock control solenoid, releasing the mechanical lock on the shift lever as the solenoid energizes. The energized solenoid allows the driver to move the shift lever out of the PARK position. When the brake pedal is not applied, the BCM turns the control voltage output of the shift lock control solenoid OFF, de-energizing the shift lock control solenoid. When the transmission is in the PARK position, the de-energized shift lock control solenoid will prevent shifting as the lever is mechanically locked in the PARK position.

During remote start operation the BCM will de-energize the automatic transmission shift lock control circuit, locking the shift lever in the PARK position

Transfer Case - MP 3010/3015

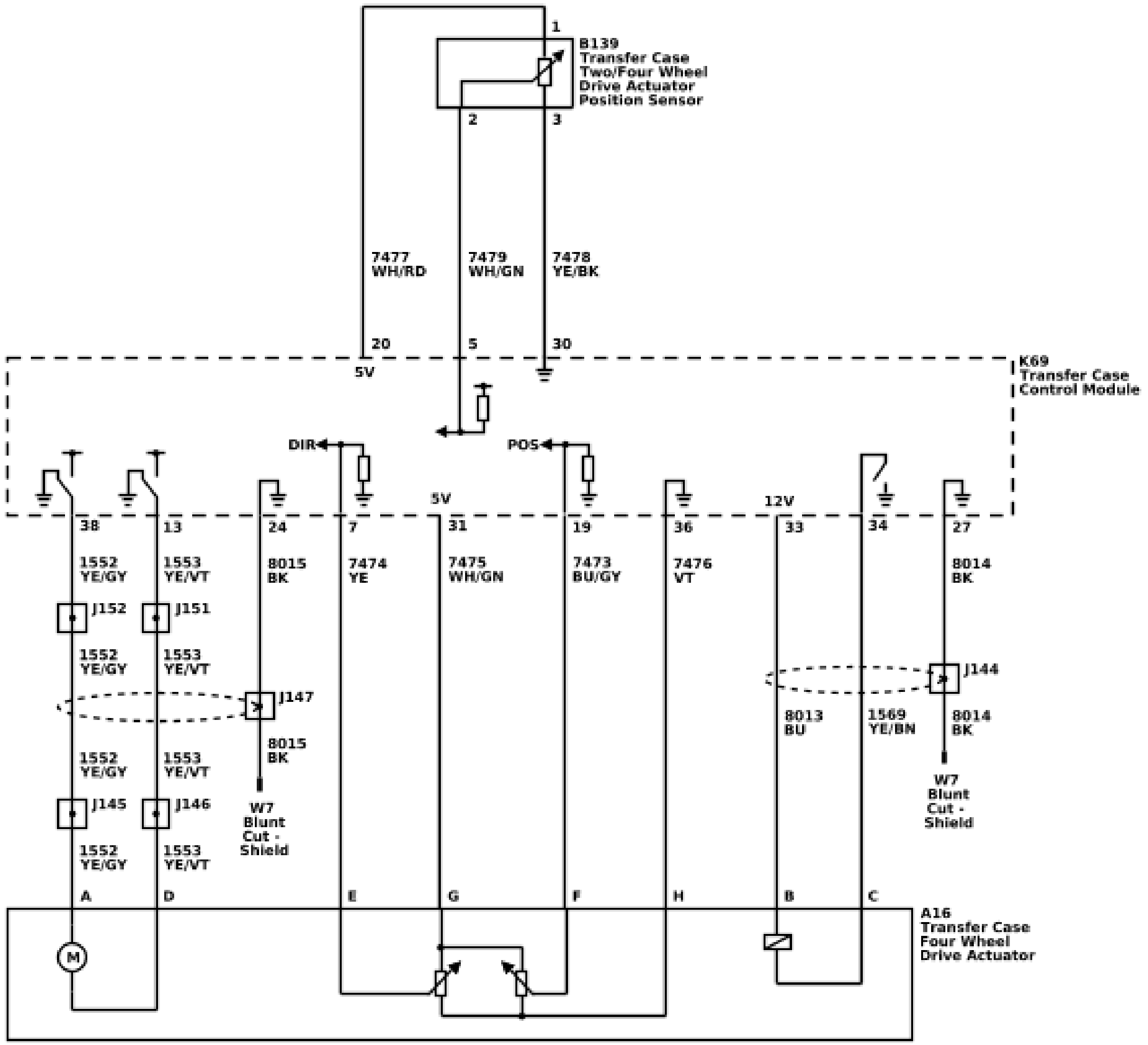
Schematic and Routing Diagrams

Transfer Case Control Schematics (Power, Ground, Serial Data, and Shift Controls)


B+
X50A Engine Wiring Harness Junction Block
F40UA 40A
X1 15
2242 RD/WH
X204 1
2242 RD/WH
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F15DA 10A
X1 12
739 VT/BK
X301 28
739 VT/BK
J302
2139 VT/BK
X201 22
2139 VT/BK
J150
2139 VT/BK
K71 Transmission Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
K9 Body Control Module
5V
X2 10
X4 3
2203 WH/BN
1449 BK/VT
J210
1449 BK/VT
2204 BK/GY
Steering Wheel Secondary/ Configurable Control Schematics
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
1
B+
18
IGN
3
4
15
16
K69 Transfer Case Control Module
X304 1
2
25
450 BK
G102A
2203 WH/BN
2204 BK/GY
1
3
S126 Ride Control Switch
365Ω
332Ω
453Ω
649Ω
AUTO
2
4
8.45kΩ
3.16kΩ
1.62kΩ
976Ω

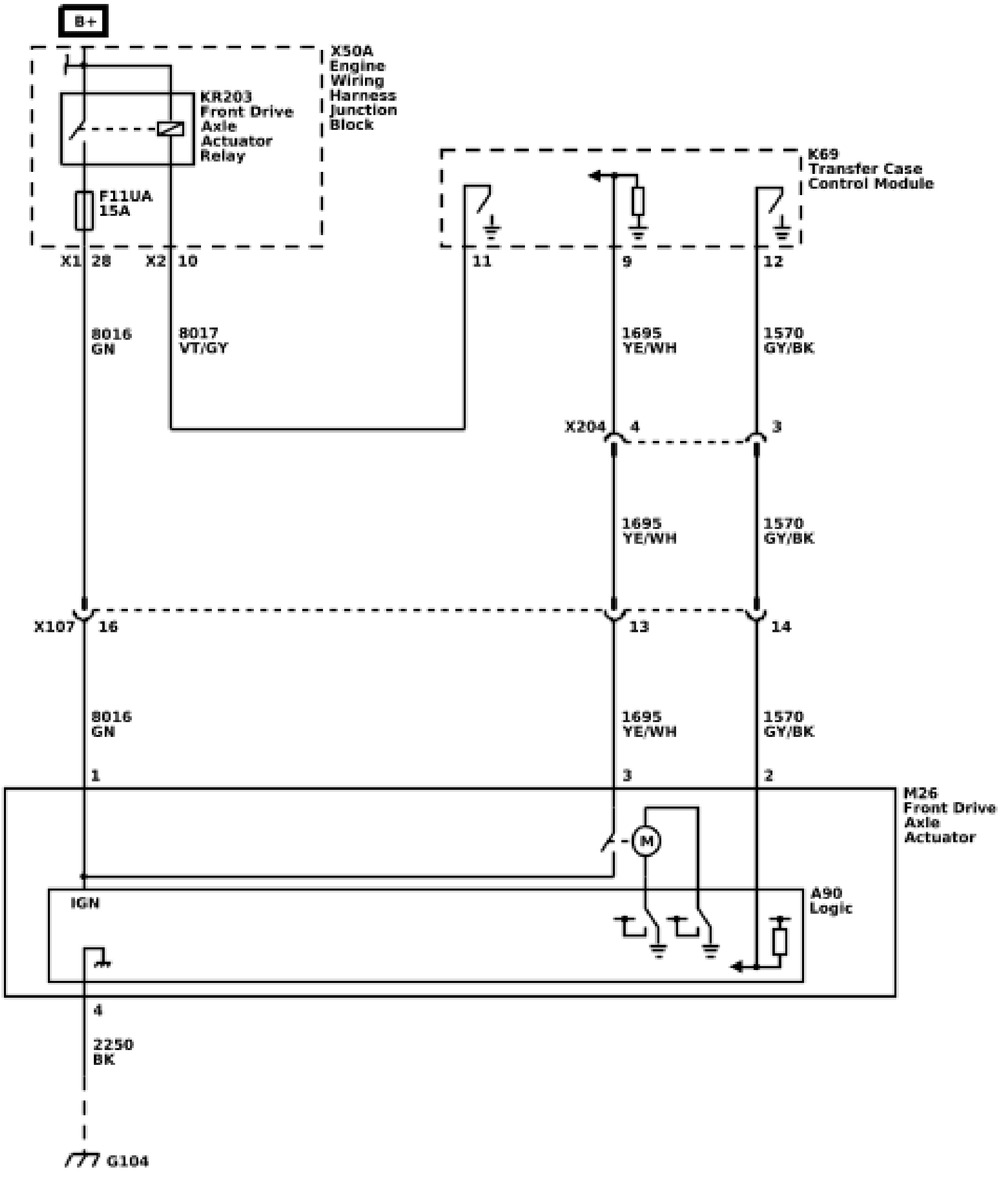
6853147

Transfer Case Control Schematics (Transfer Case Controls)


1
B139
Transfer Case
Two/Four Wheel
Drive Actuator
Position Sensor
2
3
7477
WH/RD
7479
WH/GN
7478
YE/BK
20
5
30
5V
K69
Transfer Case
Control Module
DIR
POS
5V
12V
38
13
24
7
31
19
36
33
34
27
1552
YE/GY
1553
YE/VT
8015
BK
7474
YE
7475
WH/GN
7473
BU/GY
7476
VT
8014
BK
J152
J151
J147
J144
J145
J146
8013
BU
1569
YE/BN
W7
Blunt
Cut -
Shield
A
D
E
G
F
H
B
C
M
A16
Transfer Case
Four Wheel
Drive Actuator

6853148

Transfer Case Control Schematics (Front Axle Controls)


B+
X50A Engine Wiring Harness Junction Block
KR203 Front Drive Axle Actuator Relay
F11UA 15A
X1 28
X2 10
K69 Transfer Case Control Module
11
9
12
8016 GN
8017 VT/GY
1695 YE/WH
1570 GY/BK
X204 4
3
X107 16
13
14
1
2
M26 Front Drive Axle Actuator
M
IGN
A90 Logic
4
2250 BK
G104

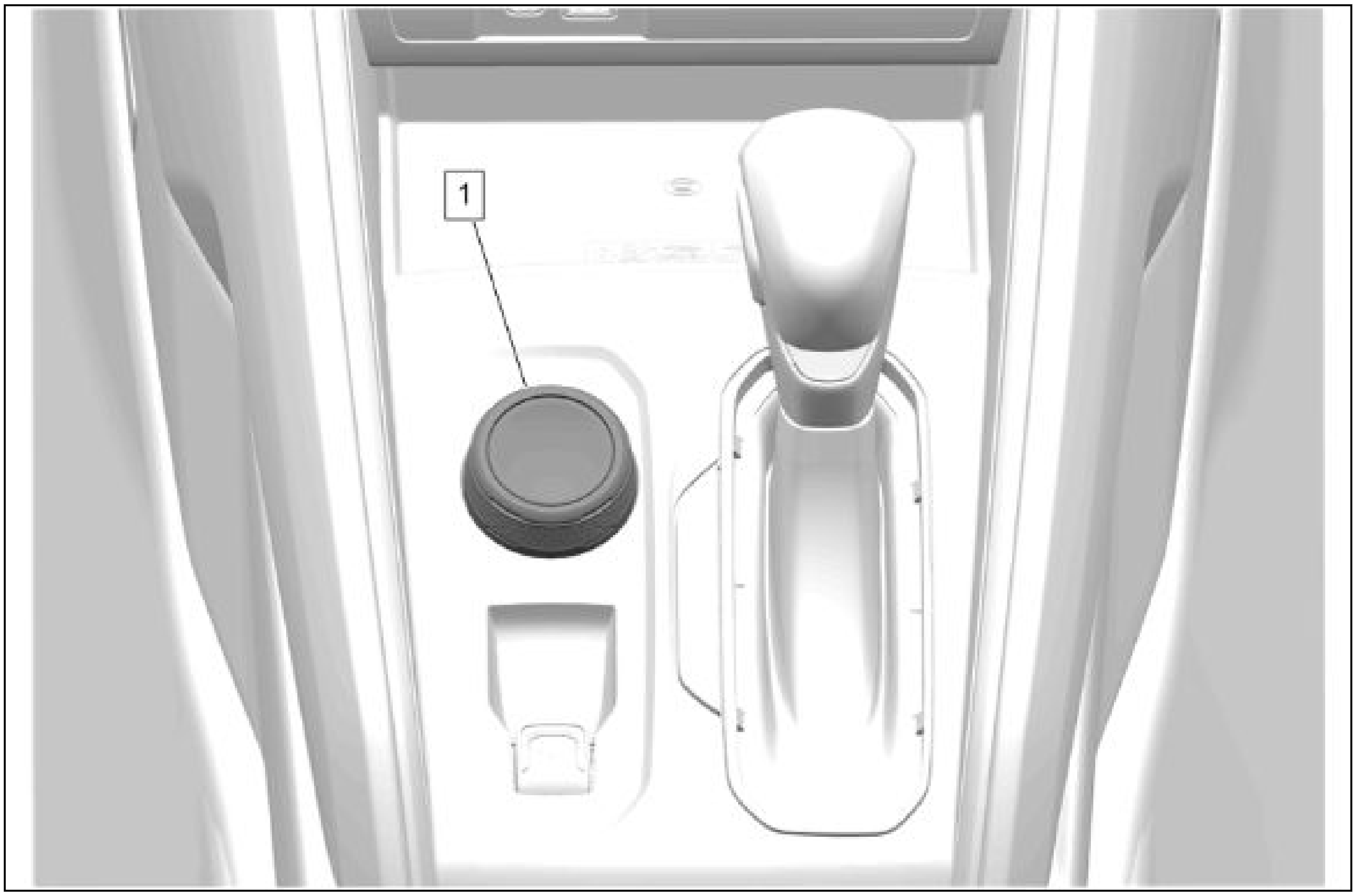
6853149

Description and Operation

Transfer Case Description and Operation

The Magna Powertrain (MP) model 3010/3015 RPO NP0 transfer case is a 1 speed automatic, active transfer case (ATC). The MP 3010/3015 ATC provides 3 modes, Auto 4WD, 4HI, and 2HI. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features, such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch torque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 N•m (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

Ride Control Switch



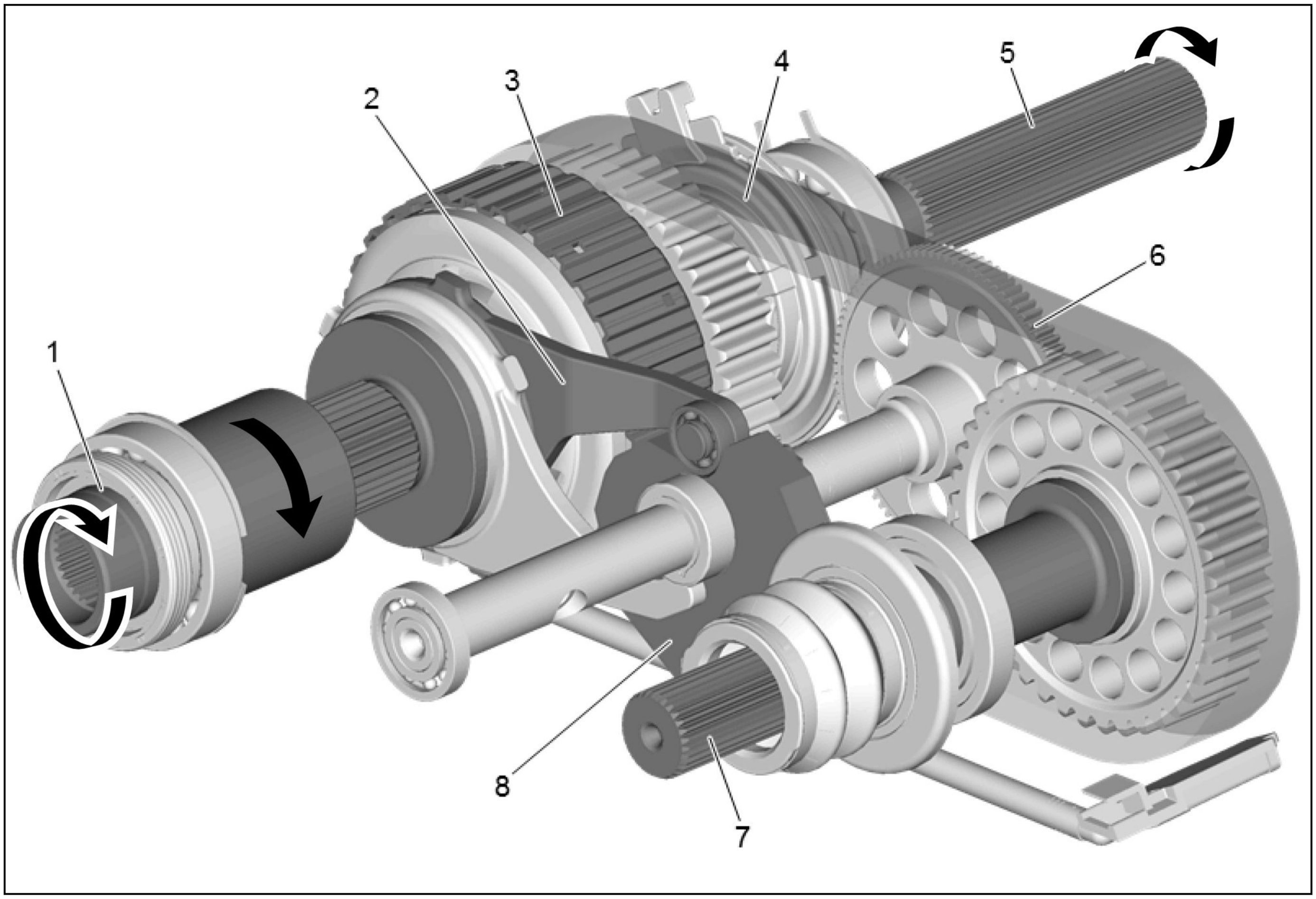
6213167

The MP 3010/3015 ATC transfer case features a 3 mode ride control switch (1) located on the console. When the ignition key is in the RUN position, the transfer case shift control module monitors the ride control switch (1) to determine if the driver desires a new mode position. At a turn of the ride control switch (1), the lamp of the new desired position begins flashing to inform the driver that the transfer case shift control module has received the request for a new mode position. The lamp continues to flash until all shifting criteria has been met and the new mode position has been reached, or has been engaged. Once the mode position is fully active, the switch indicator lamp for the new position remains ON constantly. During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheels speed sensor values equals that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3010/3015 TC transfer case has the added feature of also providing the driver with 2 manual mode positions:

- 4HI –4 Wheel Drive High Mode
- 2HI – 2 Wheel Drive High Mode

2WD Mode Power Flow



5071108

(1) Transfer Case Input Shaft

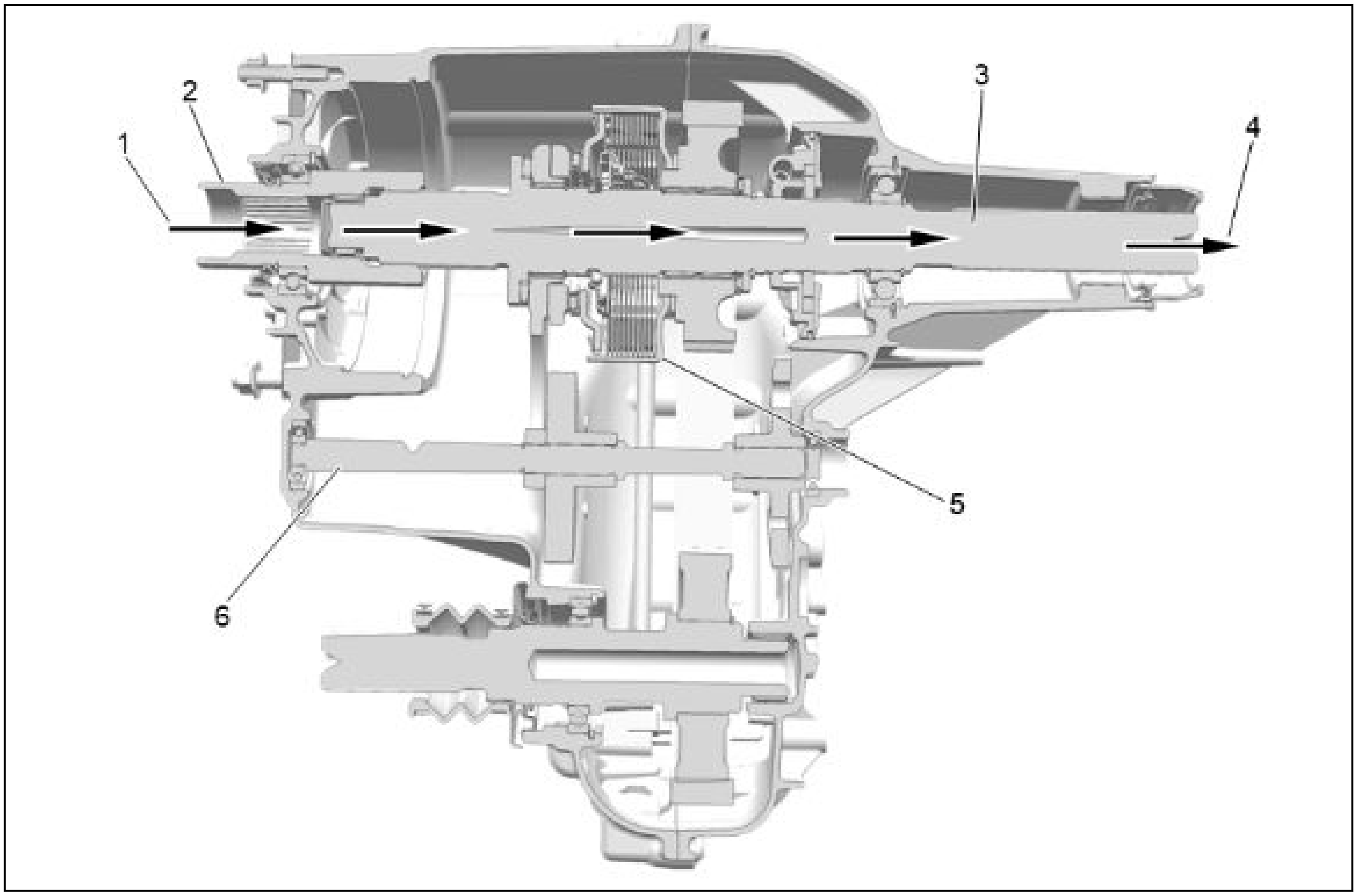
(2) Transfer Case Scissor Mechanism Lever

(3) Transfer Case Four Wheel Drive Clutch Pack

(4) Transfer Case Front Output Shaft Drive Chain Assembly

(5) Transfer Case Rear Output Shaft

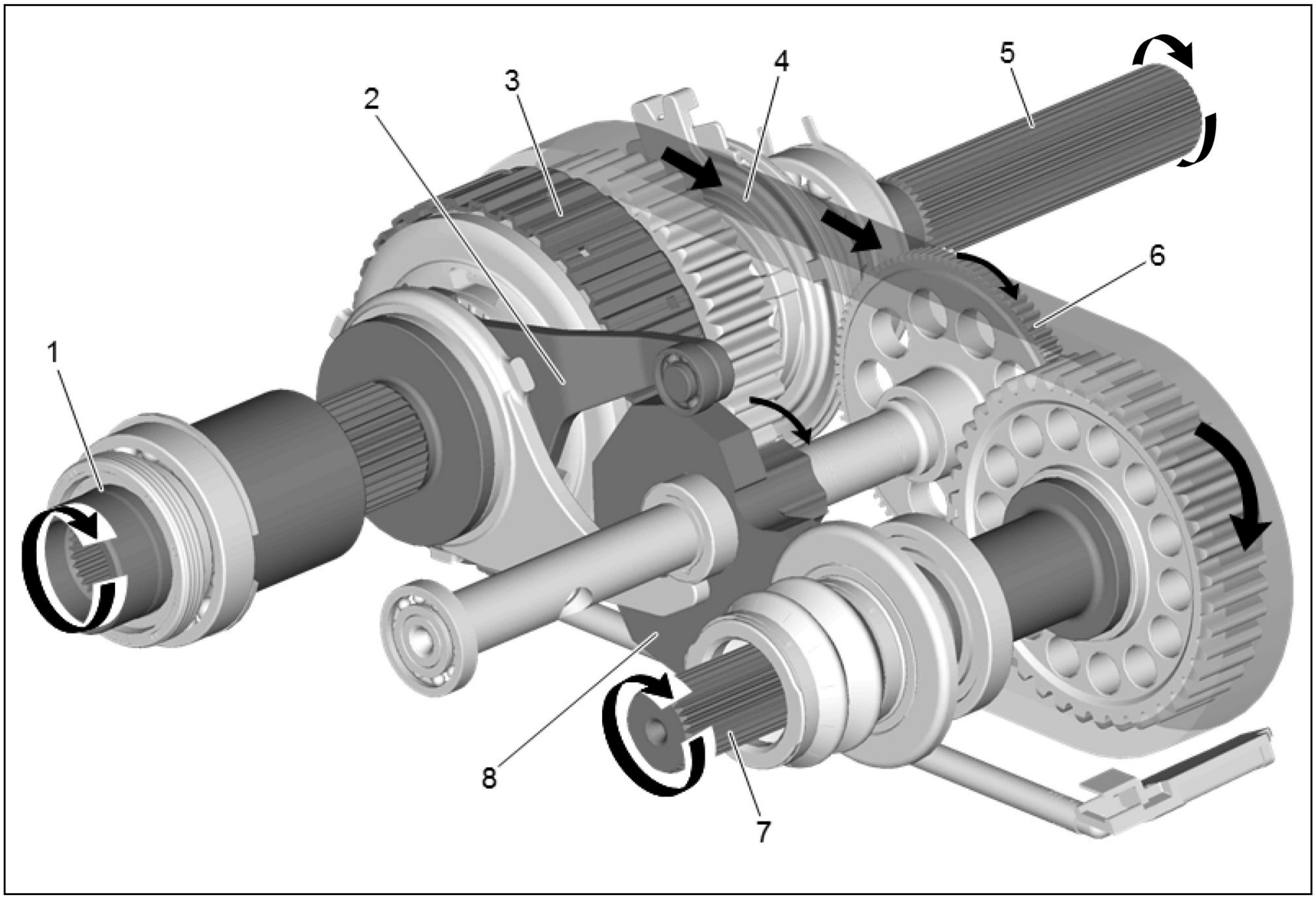
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



6261442

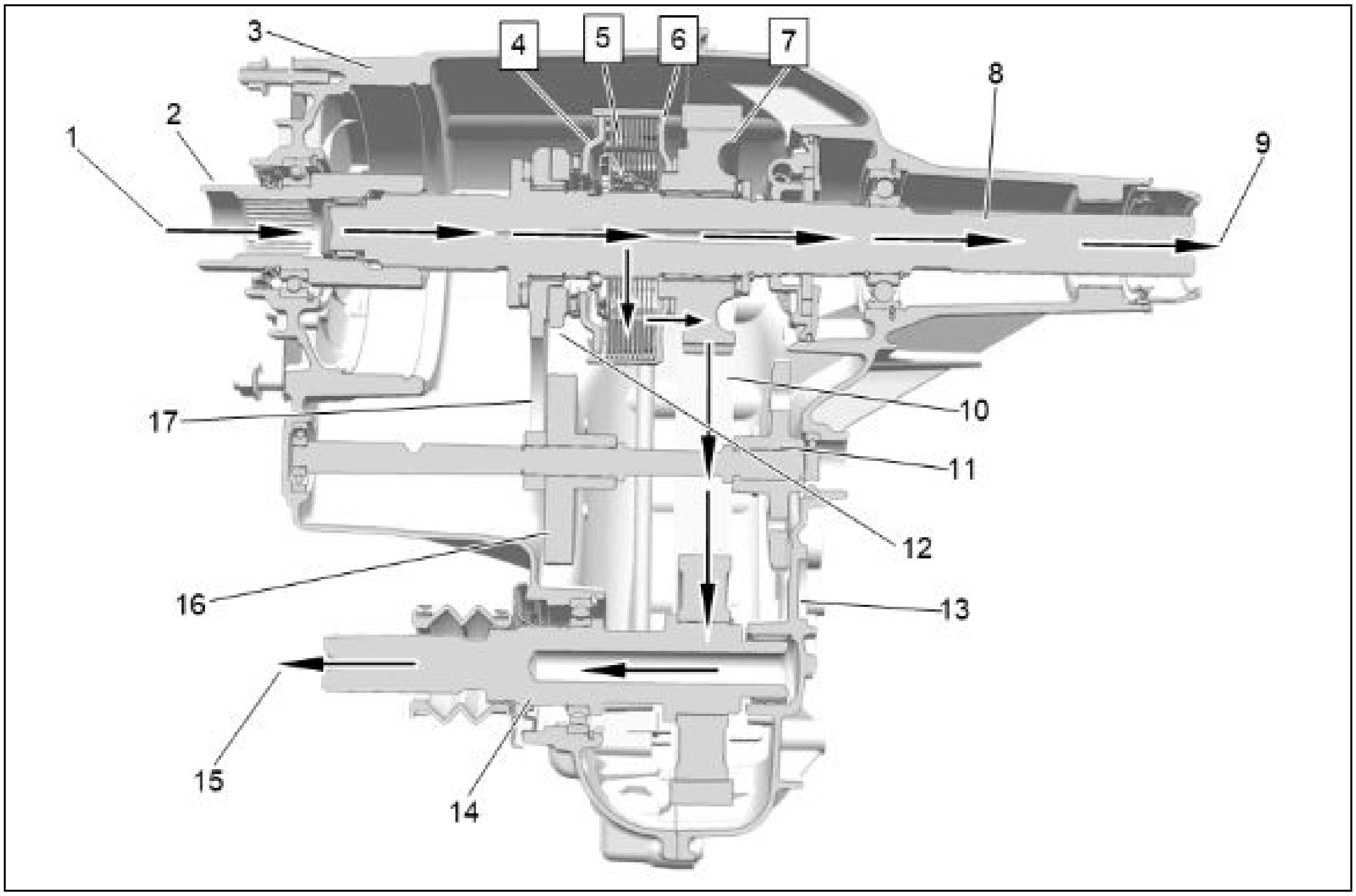
When the MP 3010/3015 ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is splined to the rear output shaft (3). The rear output shaft (3) delivers the power flow to the rear propeller shaft (4). The position of the control actuator shaft (6) allows no clutch (5) engagement.

4HI Mode Power Flow



5071136

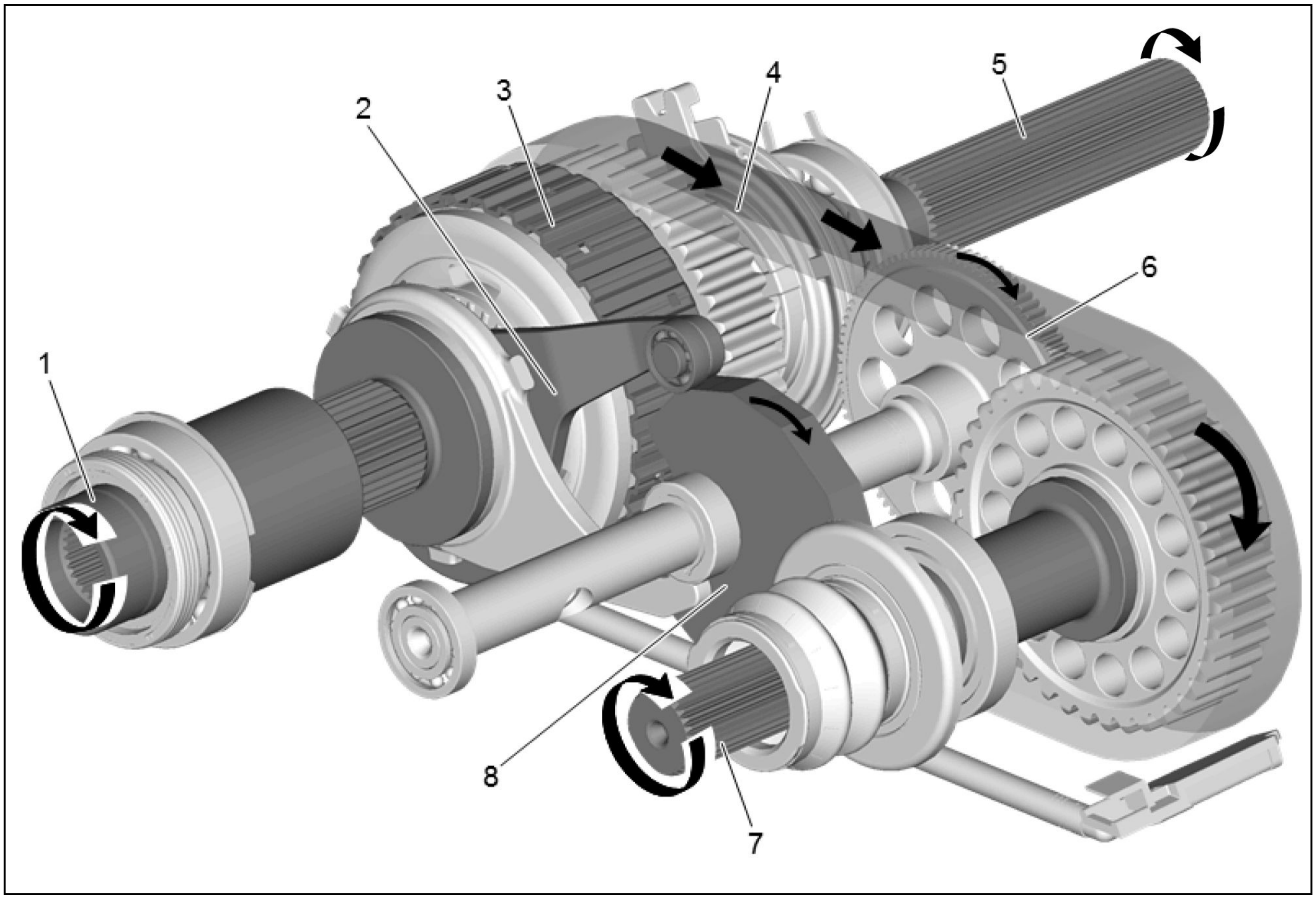
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



6261444

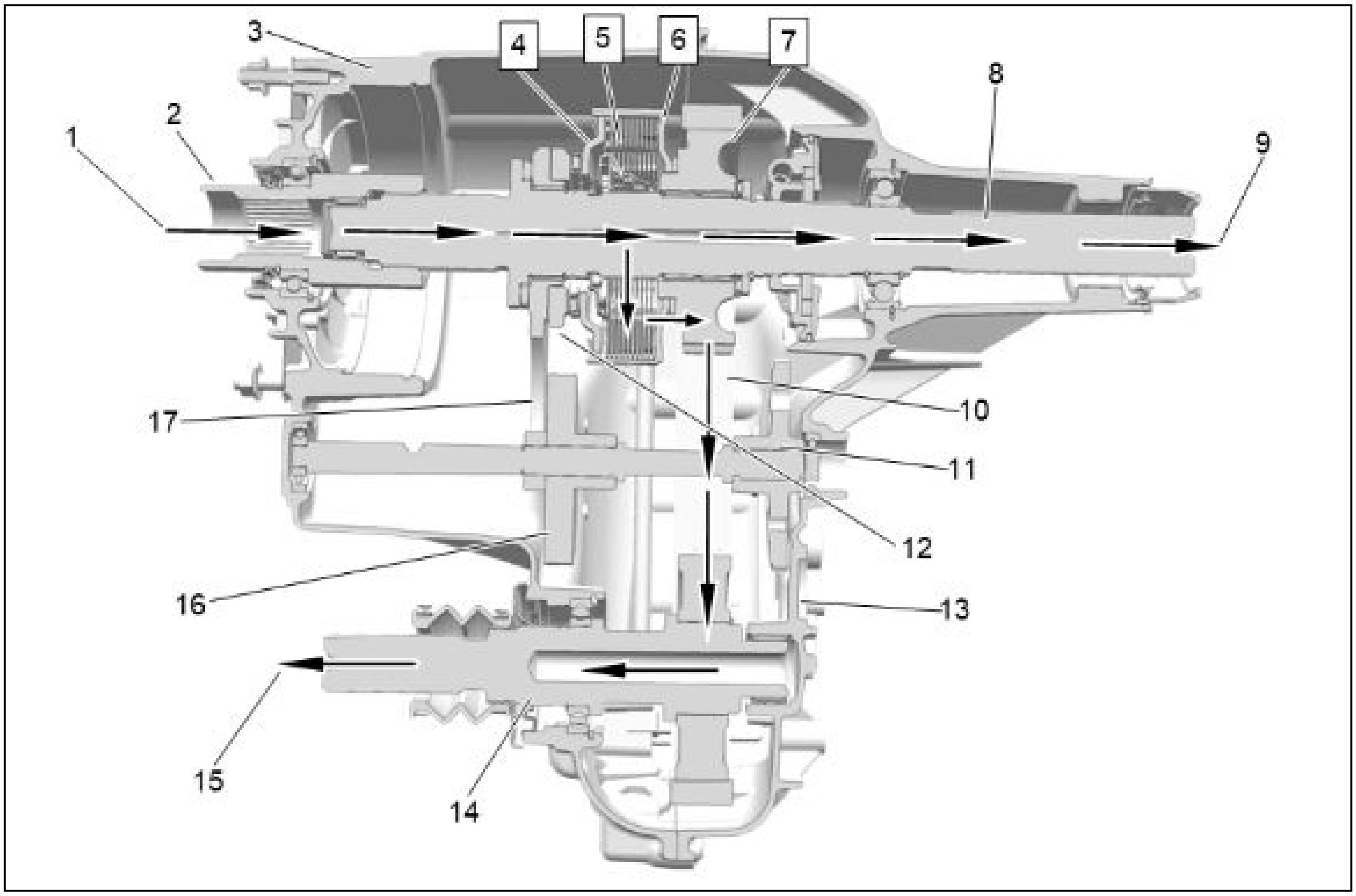
In the 4HI mode, the power flow to the rear propeller shaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propeller shaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the transfer case scissor mechanism lever (12). The transfer case scissor mechanism lever (12) pivots against the transfer case scissor mechanism lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the transfer case four wheel drive clutch housing (6), the power flow is delivered to the transfer case four wheel drive clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the transfer case four wheel drive clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The transfer case front output shaft drive sprocket (7) is splined to the transfer case four wheel drive clutch housing (6). The power flows from the transfer case front output shaft drive sprocket (7), through the transfer case front output shaft drive chain (10), to the transfer case front output shaft driven sprocket. The transfer case front output shaft driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propeller shaft (15) through the front output shaft (14).

4HI Auto Mode Power Flow



5071147

(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam


3
4
5
6
7
8
2
1
9
17
10
11
12
16
13
15
14

6261444

In the 4HI Auto mode, the power flow to the rear propeller shaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propeller shaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. The control actuator shaft is cam designed and the cam action moves the transfer case scissor mechanism lever (12). The transfer case scissor mechanism lever (12) pivots against the transfer case scissor mechanism lever (17) and moves toward the clutch pressure plate (4), to engage the clutch discs (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the transfer case four wheel drive clutch housing (6), the power flow is delivered to the transfer case four wheel drive clutch housing (6). The clutch hub is splined to the rear output shaft (8), and transfer case four wheel drive clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The transfer case front output shaft drive sprocket (7) is splined to the transfer case four wheel drive clutch housing (6). The power flows from the transfer case front output shaft drive sprocket (7), through the transfer case front output shaft drive chain (10), to transfer case front output shaft driven sprocket. The transfer case front output shaft driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propeller shaft (15) through the front output shaft (14). When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

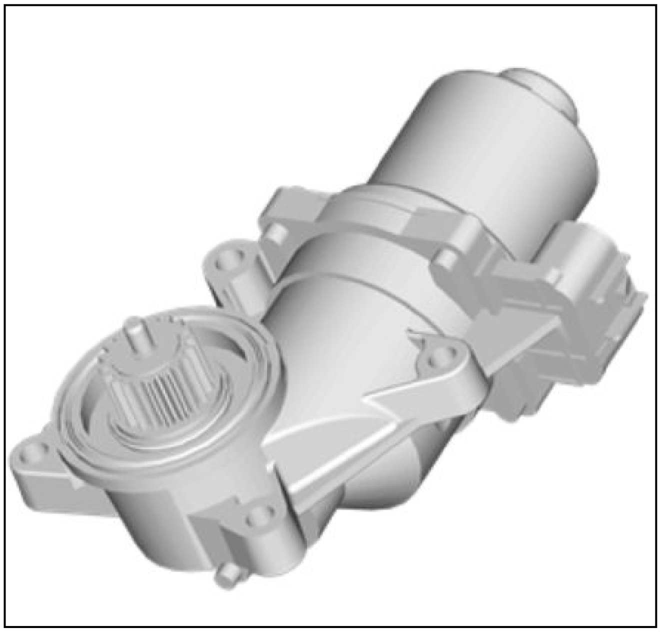
Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the driver information center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system condition has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

Transfer Case Two/Four Wheel Drive Incremental Sensor

The incremental sensor is mounted within the transfer case actuator and is replaced as an assembly. The incremental sensor converts the shift detent lever shaft position, representing a mode, into an electrical signal input to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the voltage returned on the incremental encoder impulse signal circuit. This voltage translates into AUTO 4WD, 2HI, and 4HI or in transition between gears.

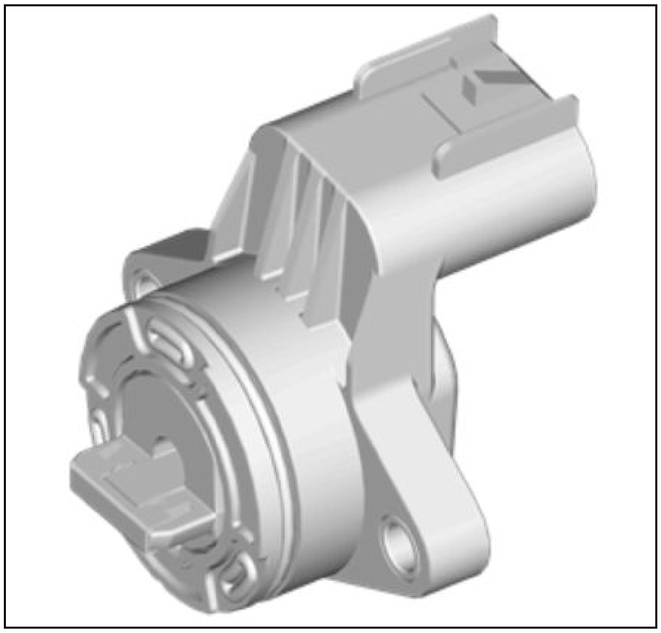
Transfer Case Two/Four Wheel Drive Actuator Assembly



1986212

The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it turns the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI to 4HI positions.

Transfer Case Actuator Shaft Position Sensor Assembly



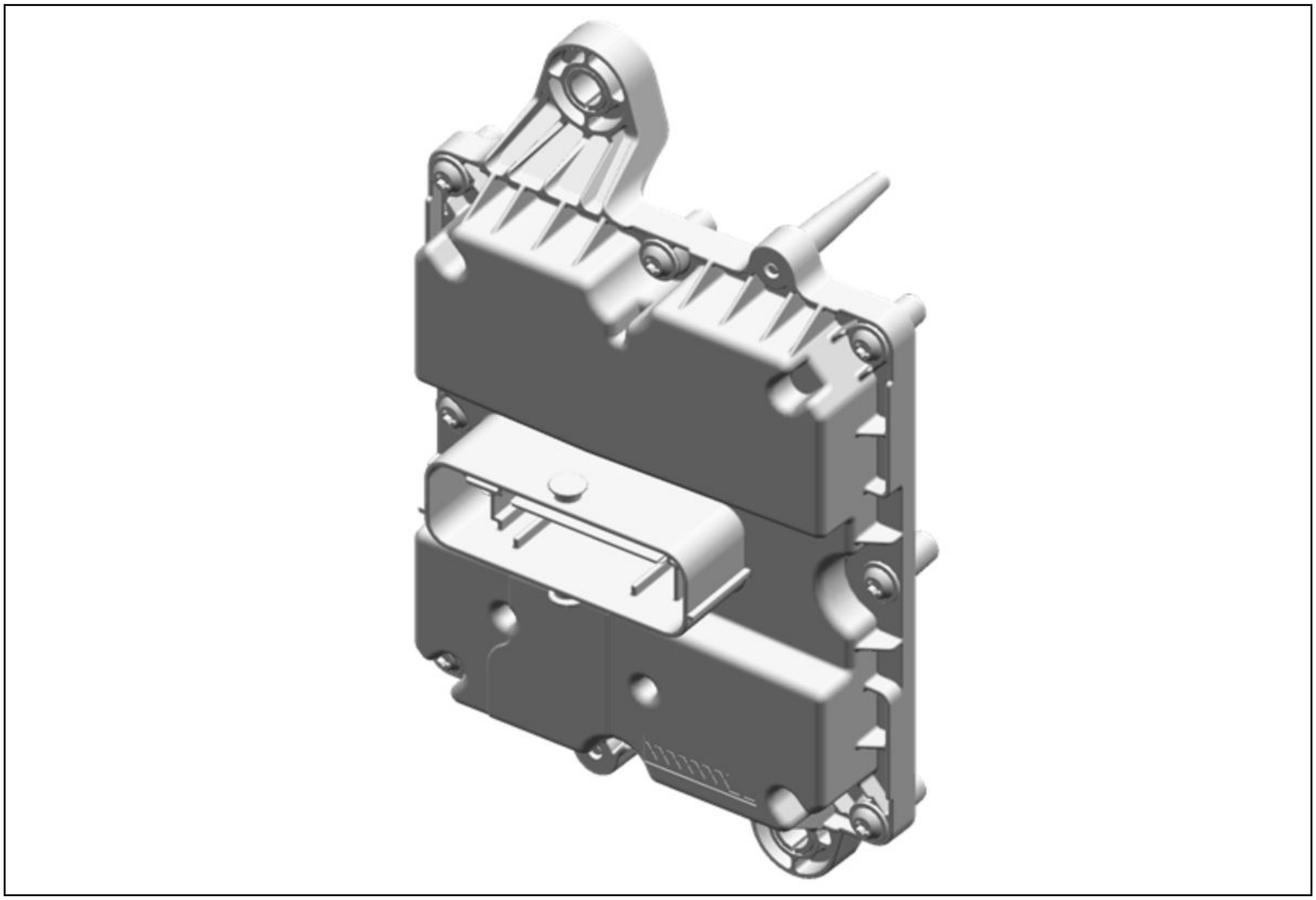
1986213

This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

Transfer Case Motor Lock

The transfer case motor lock is used to provide a 2HI and 4HI feature. When the lock circuit is energized, the transfer case encoder motor is allowed to turn. When the transfer case is placed 2HI or 4HI the motor lock circuit is de-energized and the lock is applied. This assures that the transfer case remains in the current gear position until a new gear position is requested. When AUTO 4WD is selected, the motor lock remains applied until an adaptive mode, torque being applied to the front propeller shaft, is required. During an adaptive mode the motor lock circuit is energized and the motor lock is released, enabling the encoder motor to turn and apply or release torque at the front propeller shaft.

Transfer Case Shift Control Module



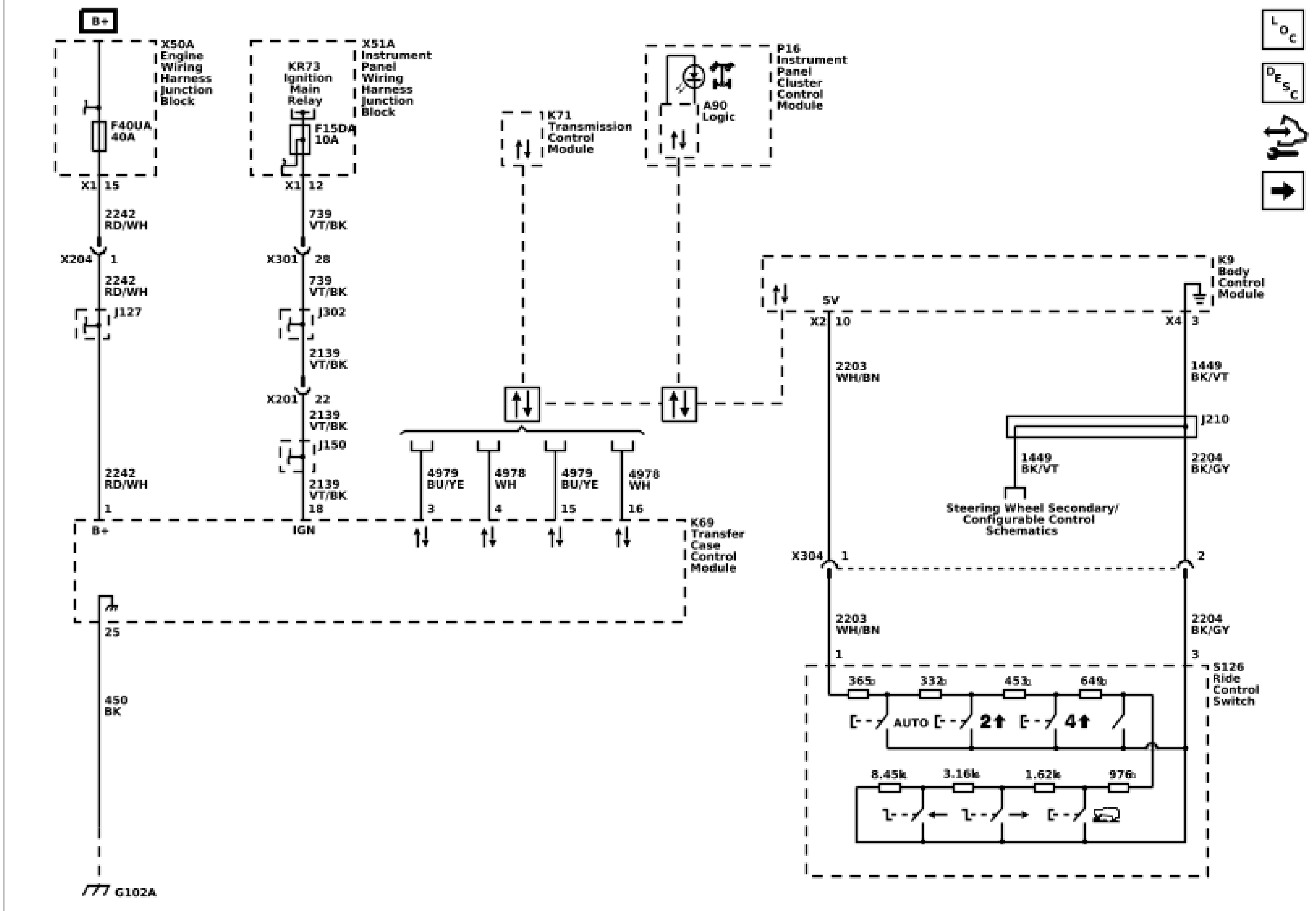
5071149

The transfer case shift control module uses the vehicle identification number (VIN) for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propeller shaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.

Transfer Case - MP 3023/3024/3025

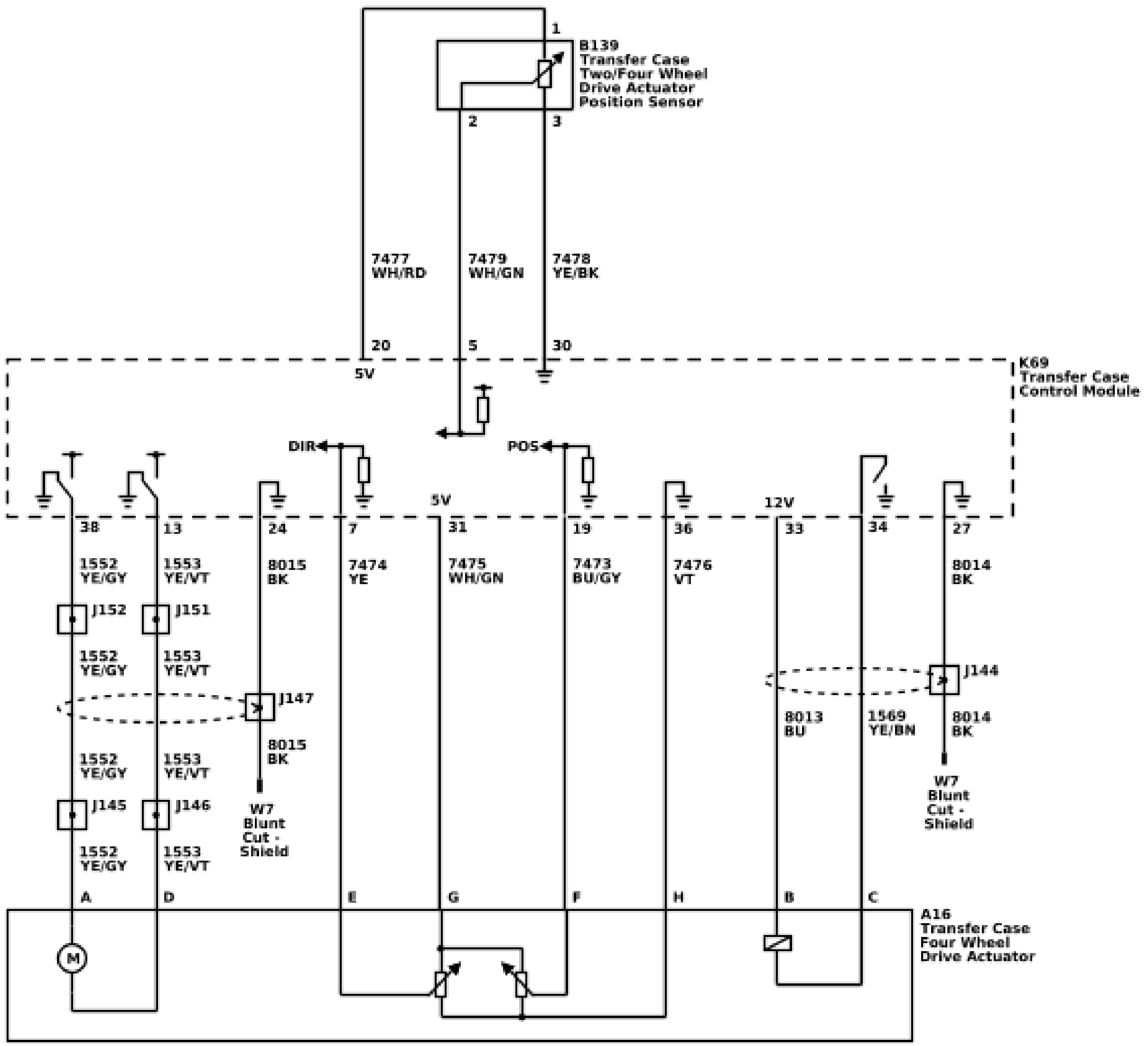
Schematic and Routing Diagrams

Transfer Case Control Schematics (Power, Ground, Serial Data, and Shift Controls)


B+
X50A Engine Wiring Harness Junction Block
F40UA 40A
X1 15
2242 RD/WH
X204 1
2242 RD/WH
J127
2242 RD/WH
1
B+
X51A Instrument Panel Wiring Harness Junction Block
KR73 Ignition Main Relay
F15DA 10A
X1 12
739 VT/BK
X301 28
739 VT/BK
J302
2139 VT/BK
X201 22
2139 VT/BK
J150
2139 VT/BK
18
IGN
K71 Transmission Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
4979 BU/YE
3
4978 WH
4
4979 BU/YE
15
4978 WH
16
K69 Transfer Case Control Module
25
450 BK
G102A
K9 Body Control Module
5V
X2 10
X4 3
2203 WH/BN
1449 BK/VT
J210
1449 BK/VT
2204 BK/GY
Steering Wheel Secondary/ Configurable Control Schematics
X304 1
2
2203 WH/BN
2204 BK/GY
1
3
S126 Ride Control Switch
365Ω
332Ω
453Ω
649Ω
AUTO
2
4
8.45kΩ
3.16kΩ
1.62kΩ
976Ω

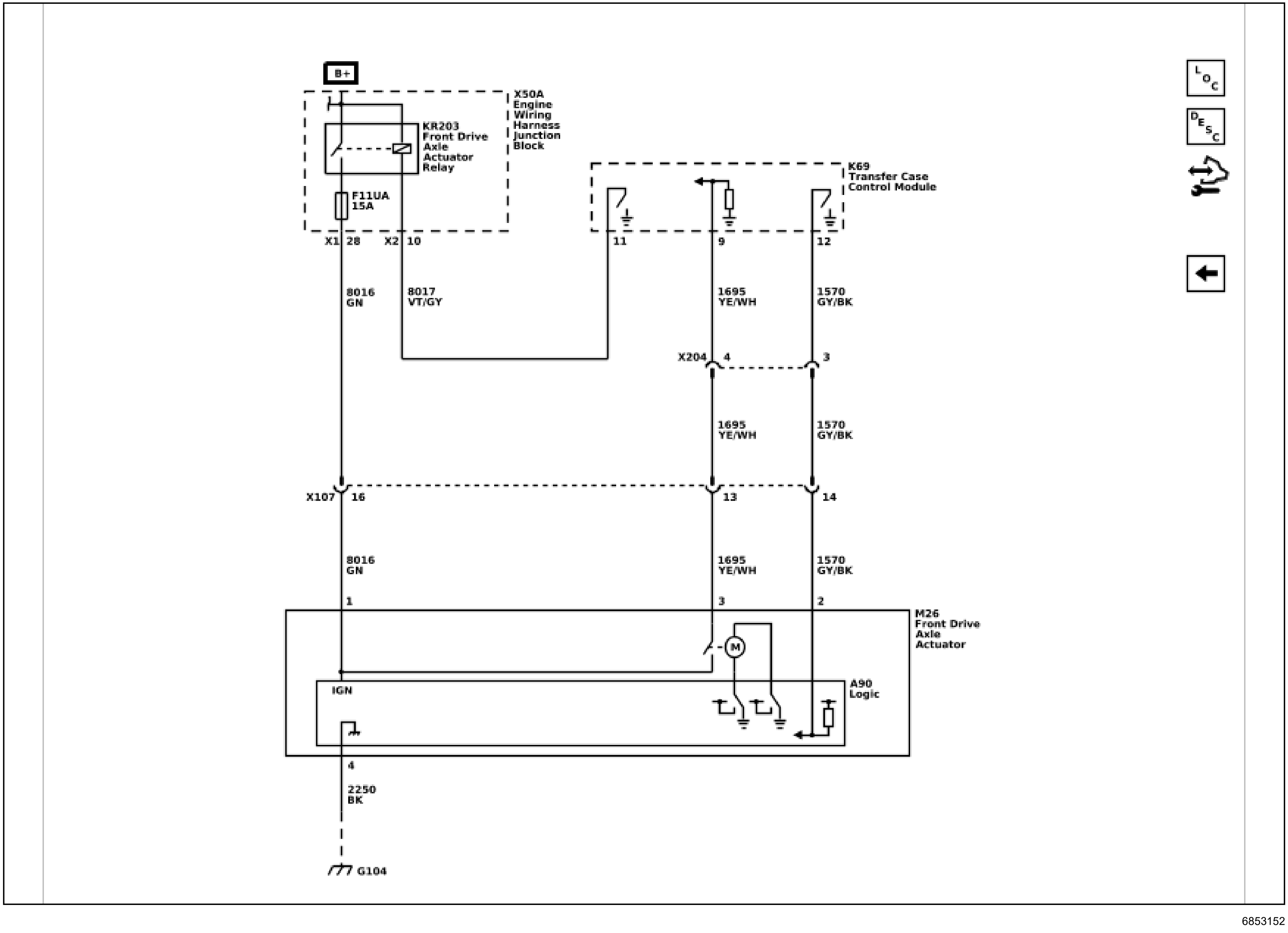
6853150

Transfer Case Control Schematics (Transfer Case Controls)


1
B139
Transfer Case
Two/Four Wheel
Drive Actuator
Position Sensor
2
3
7477
WH/RD
7479
WH/GN
7478
YE/BK
20
5
30
5V
K69
Transfer Case
Control Module
DIR
POS
5V
12V
38
13
24
7
31
19
36
33
34
27
1552
YE/GY
1553
YE/VT
8015
BK
7474
YE
7475
WH/GN
7473
BU/GY
7476
VT
8014
BK
J152
J151
J147
J144
8013
BU
1569
YE/BN
J145
J146
W7
Blunt
Cut -
Shield
A
D
E
G
F
H
B
C
A16
Transfer Case
Four Wheel
Drive Actuator
M

6853151

Transfer Case Control Schematics (Front Axle Controls)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X50A
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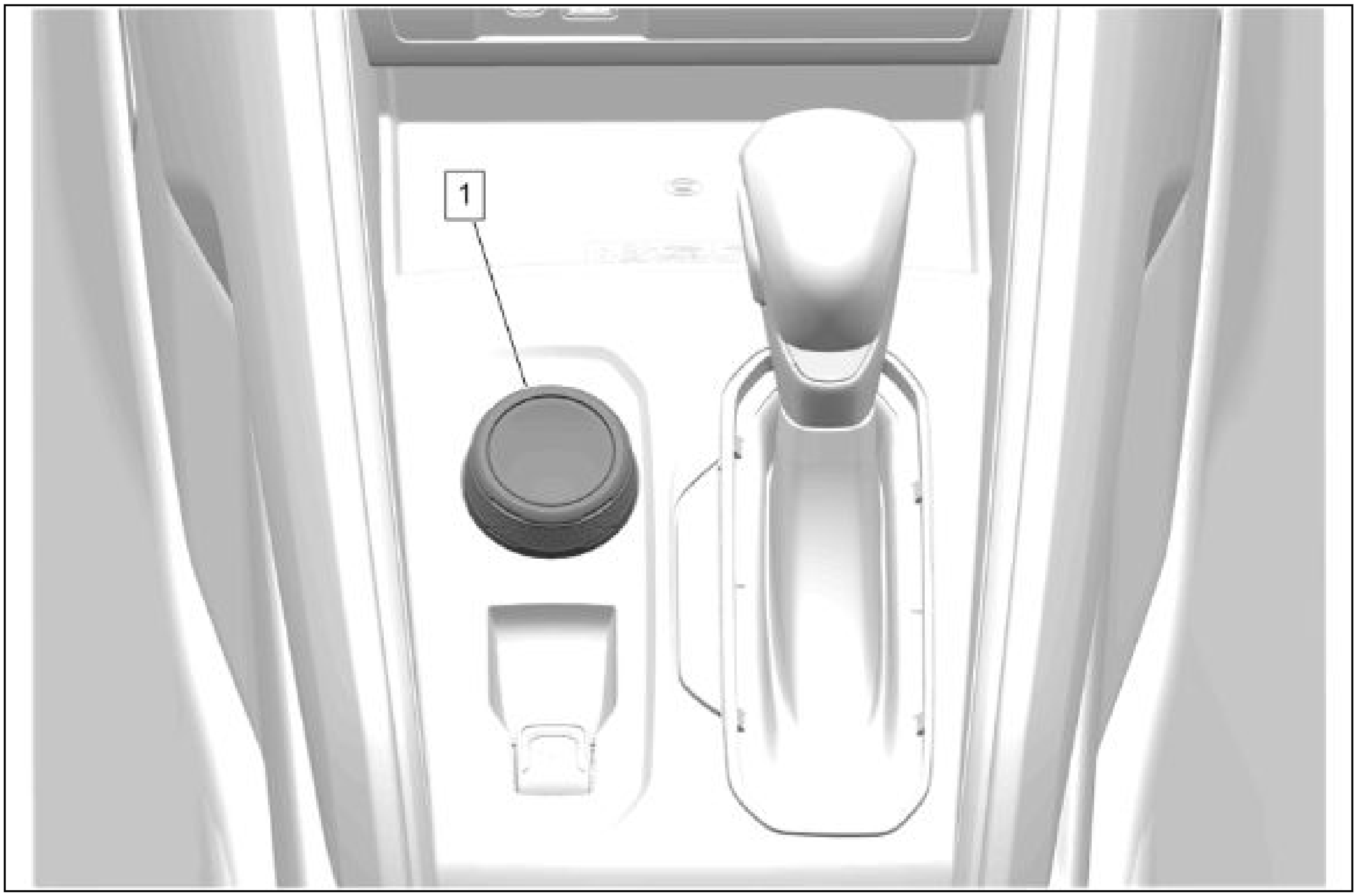
Wiring
Harness
Junction
Block
KR203
Front Drive
Axle
Actuator
Relay
F11UA
15A
X1 28
X2 10
K69
Transfer Case
Control Module
11
9
12
8016
GN
8017
VT/GY
1695
YE/WH
1570
GY/BK
X204
4
3
X107
16
13
14
1
2
M26
Front Drive
Axle
Actuator
M
A90
Logic
IGN
4
2250
BK
G104
6853152

Description and Operation

Transfer Case Description and Operation

The Magna Powertrain (MP) model 3023/3024/3025 RPO NQH transfer case is a 2 speed automatic, active transfer case (ATC). The MP 3023/3024/3025 ATC provides 5 modes, Auto 4WD, 4HI, 4LO, 2HI and NEUTRAL. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch torque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 newtonm (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

Ride Control Switch



6213167

The MP 3023/3024/3025 ATC transfer case features a 5 mode ride control switch located on the instrument panel. When the ignition key is in the RUN position, the transfer case shift control module monitors the ride control switch to determine if the driver desires a new mode/range position.

To command a shift, press button of the new desired state. The actual 4x4 shift request is only made after the button is released. Transfer Case state will be displayed in the Cluster at all times. Graphic location could vary depending on trim level. However, graphics will be consistent. The graphic in the cluster will blink while a shift is in progress. The graphic will change to indicate the mode requested. When the shift is complete, the graphic will stop blinking and become steady. If the transfer case cannot complete a shift, the graphic will return to the previously selected mode. While shift is in progress, cluster will display following DIC message: “4WD Shift in Progress”. The DIC message will turn off once the shift is complete.

During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheel speed sensor matches that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3023/3024/3025 ATC transfer case has the added feature of also providing the driver with 4 manual mode/range positions:

- 4HI – 4 Wheel Drive high range
- 2HI – 2 Wheel Drive high range
- 4LO – 4 wheel drive low range, 2.72:1 gear ratio reduction.
- Neutral

The driver may choose to select any of these mode/range positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria has been met:

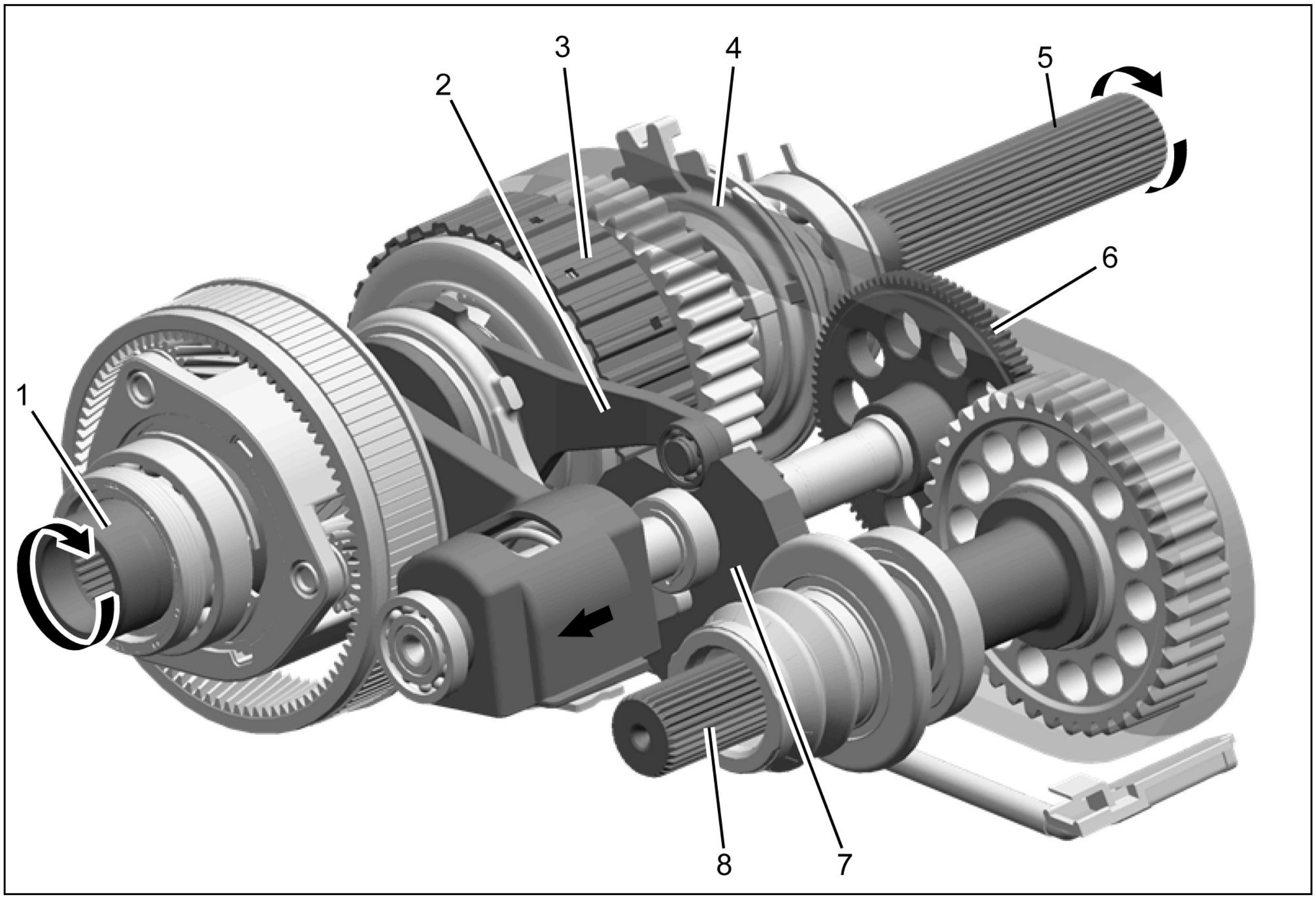
- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 mph).

This transfer case also has a NEUTRAL position. A shift to the NEUTRAL position allows the vehicle to be towed without rotating the transmission output shaft. In the NEUTRAL position, the rear propeller shaft rotates the transfer case rear output shaft, in turn rotating the oil pump, thus providing constant lubrication during towing. NEUTRAL position may be obtained only if the following criteria have been met:

- Start the vehicle or turn the ignition on.
- Shift the transmission to NEUTRAL.
- Shift the transfer case to 2 HI. (Shifts to transfer case neutral are only allowed when transfer case initial state is 2 HI.)
- Apply park brake and/or Service brake. If Park Brake and/or service brake is not applied within 20 seconds, transfer case will remain in original state.

Once these conditions have been met, Press 2 HI 5 sequential times in 10 seconds until the Transfer Case N (Neutral) graphic starts blinking in cluster. When shift to Transfer Case N (Neutral) is complete, graphic in cluster will be steady. When the system completes the shift to NEUTRAL, the red NEUTRAL lamp will illuminate.

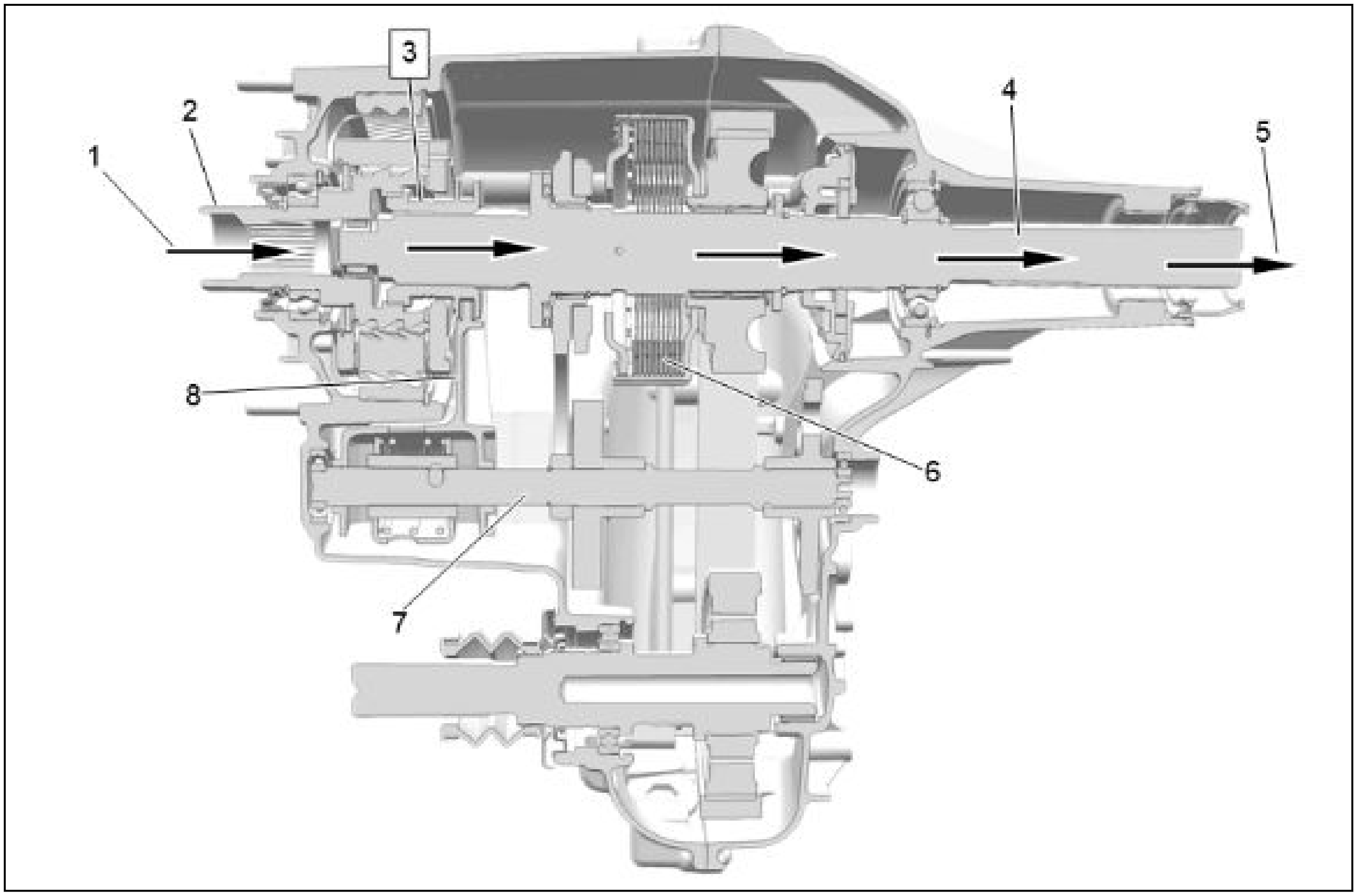
2WD Mode Power Flow



4994663

(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

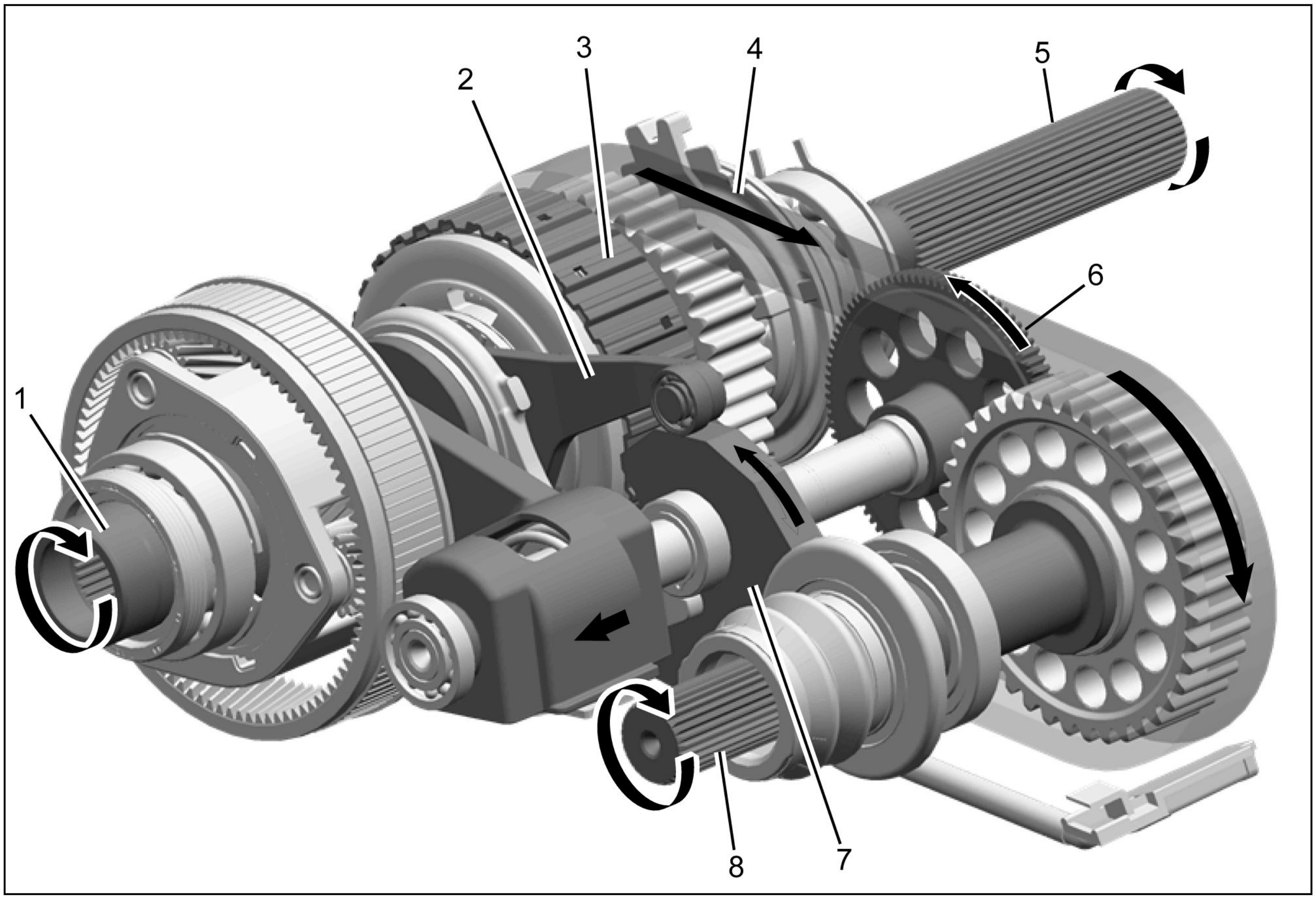
2WD Mode Power Flow



6261448

When the MP 3023/3024/3025 ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is connected to the rear output shaft (4) by the transfer case high/low clutch (3). The transfer case high/low planetary carrier (3) outer teeth are engaged with the input shaft (2) inner, high-speed position teeth. At the same time the transfer case high/low planetary carrier is slip splined to the rear output shaft (4). The rear output shaft (4) delivers the power flow to the rear propeller shaft (5). The position of the transfer case two/four wheel drive actuator shaft (7) allows no clutch (6) engagement. The transfer case high/low shift fork (8), is in the high-speed position on the transfer case two/four wheel drive actuator shaft (7).

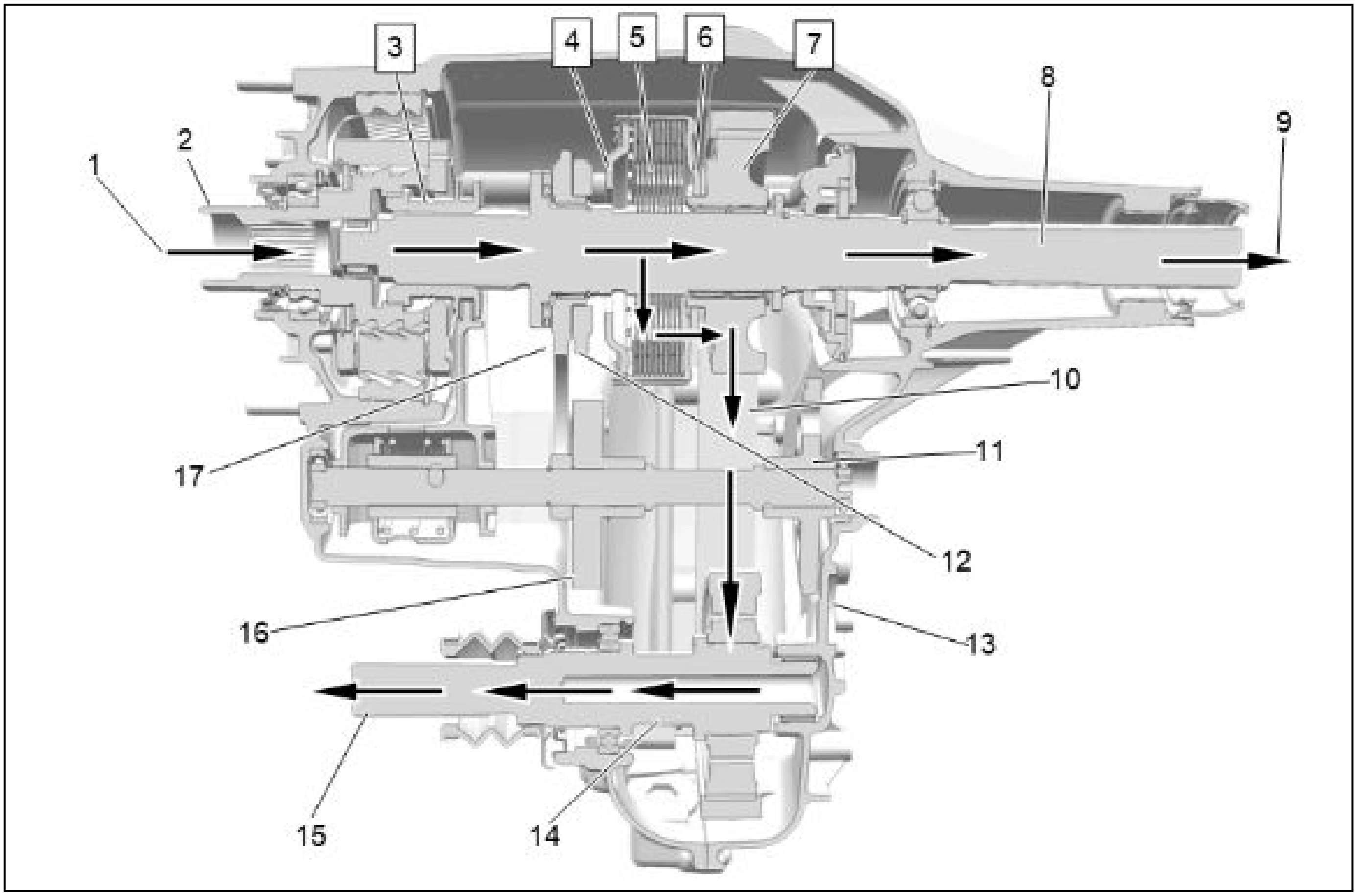
4HI Mode Power Flow



4994666

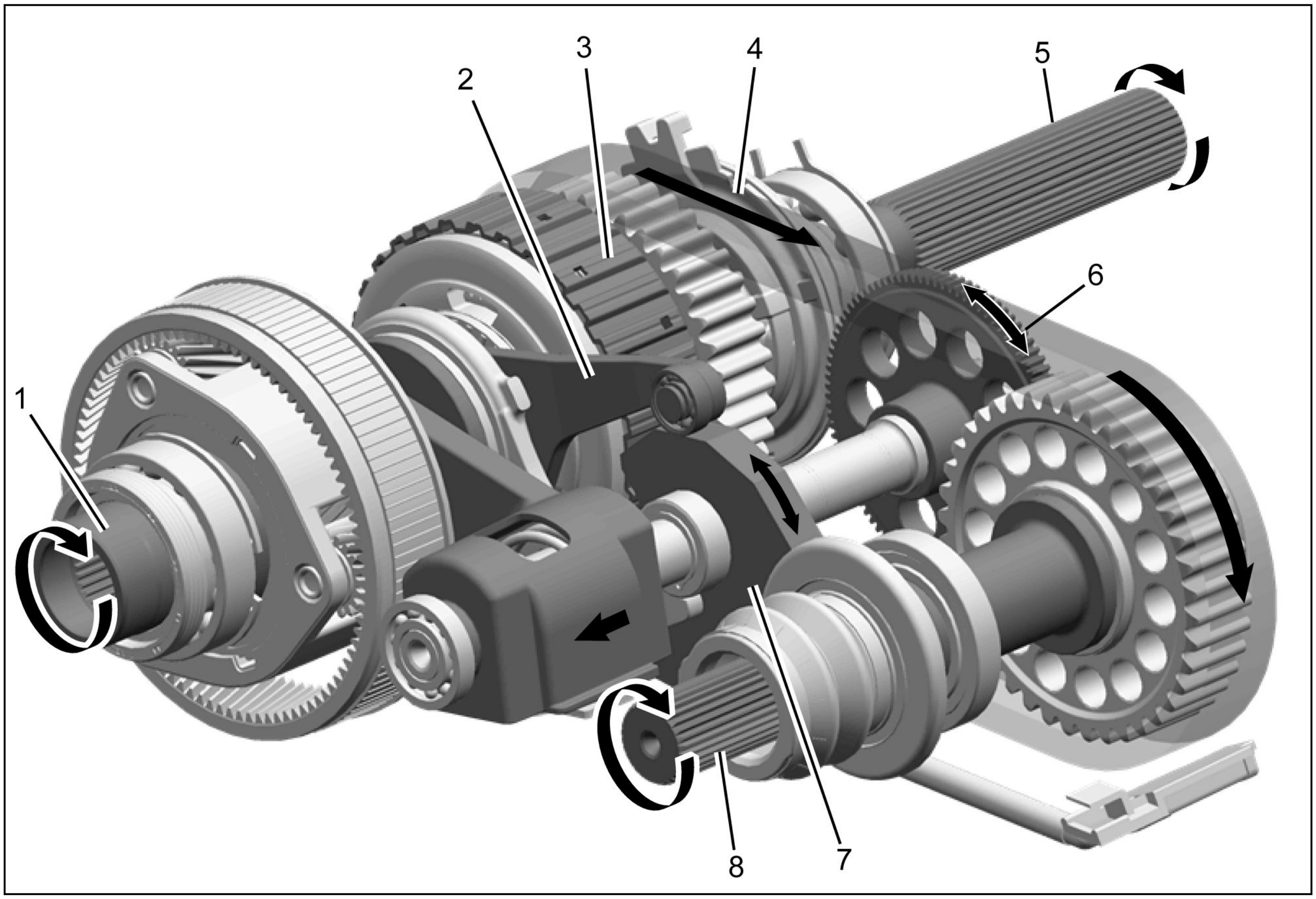
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

4HI Mode Power Flow



In the 4HI mode, the power flow to the rear propeller shaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propeller shaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the transfer case scissor mechanism lever (12). The transfer case scissor mechanism lever (12) pivots against the transfer case scissor mechanism lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the transfer case four wheel drive clutch housing (6). The power flows from the transfer case front output shaft drive sprocket (7), through the transfer case front output shaft drive chain (10), to the transfer case front output shaft driven sprocket. The transfer case front output shaft driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propeller shaft (15) through the front output shaft (14).

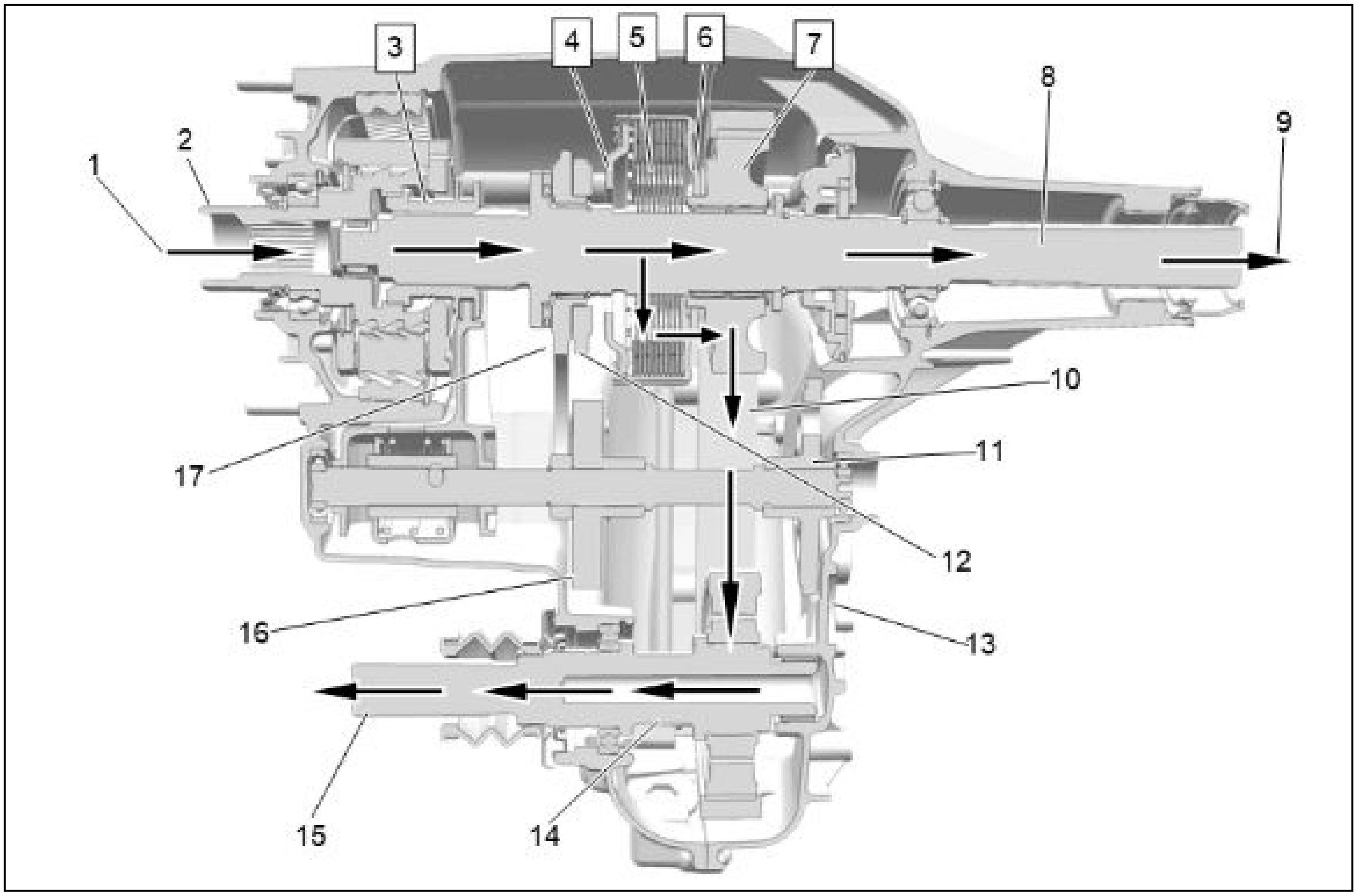
Auto 4WD Mode Power Flow



4994668

(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

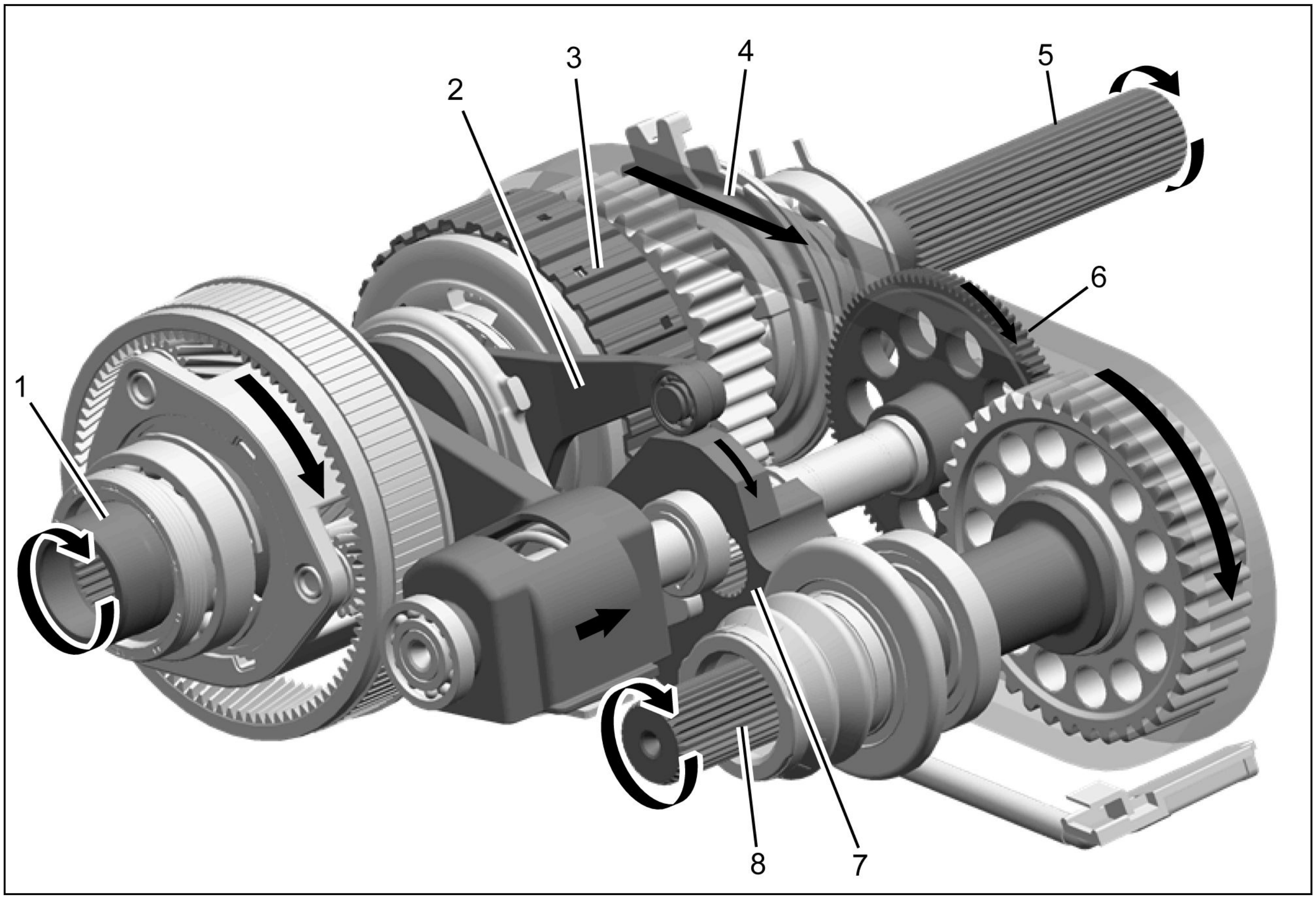
AUTO 4WD Mode Power Flow



6261449

During the Auto 4WD mode, the power flow is the same as it is in the 4HI mode. Except, during the Auto 4WD mode, the 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

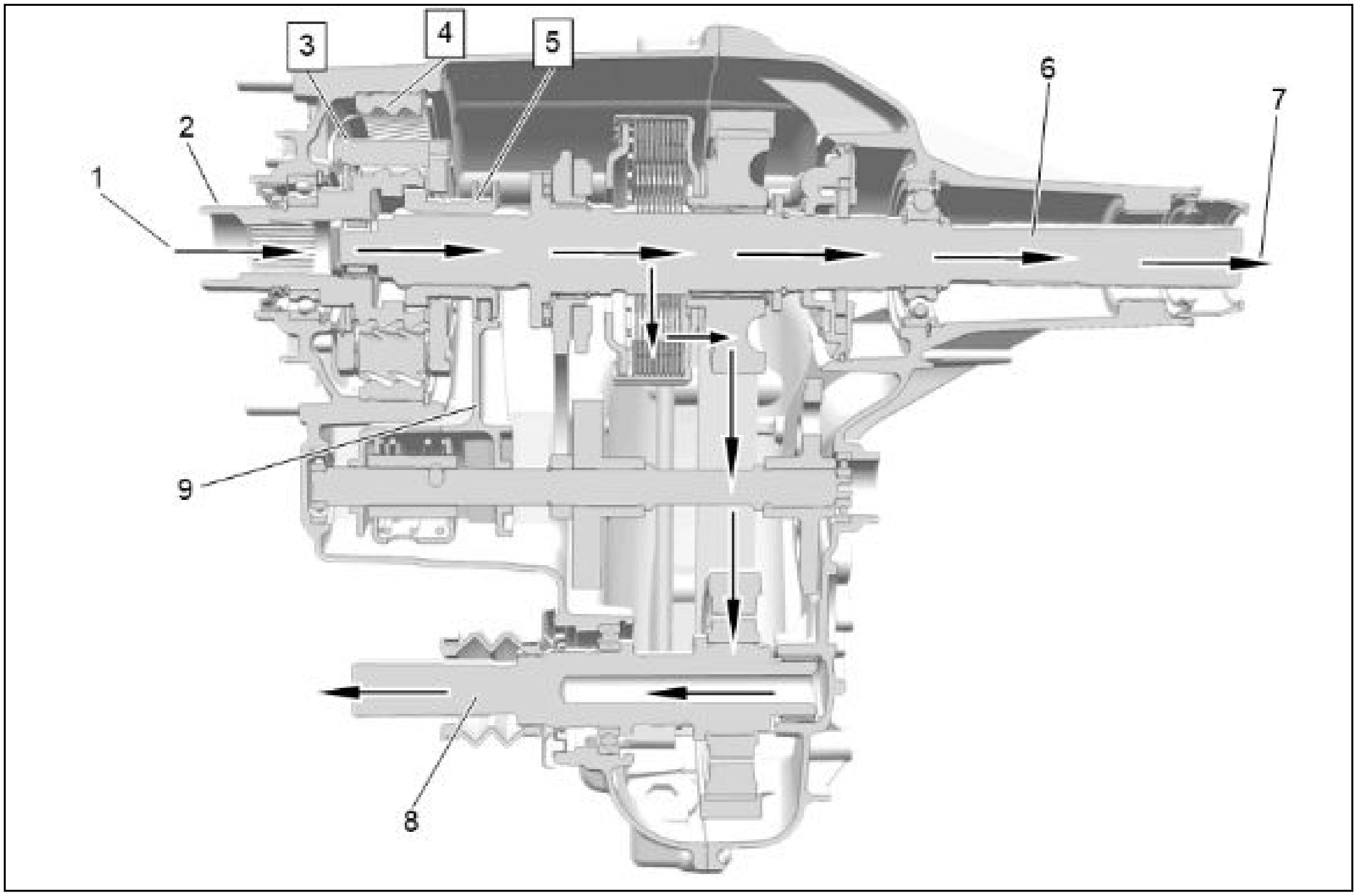
4LO Mode Power Flow



4994671

(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

4LO Mode Power Flow



6261450

When shifting the transfer case to the 4LO mode, it commands the 2/4 wheel drive actuator assembly to turn the control actuator shaft, to move the transfer case high/low shift fork (9). The transfer case high/low shift fork (9) moves the transfer case high/low clutch (5), which is slip splined on the rear output shaft (6) toward the rear of the transfer case. The transfer case high/low clutch (5) outer teeth disengage from the input shaft (2) inner teeth. The transfer case high/low clutch (5) outer teeth then engage in the planetary carrier teeth. The power flow is now from the input shaft (2) planetary teeth to the planetary gears (3) in the carrier. Rotating the planetary gears (3), which are engaged in the high/low internal gear (4), the planetary carrier rotates. The planetary carrier engaged to the transfer case high/low clutch (5), drives the rear output shaft (6), providing a 2.72 reduction to the speed of the rear output shaft (6). The power flow to the front propeller shaft (8) is the same as it is in the 4HI.

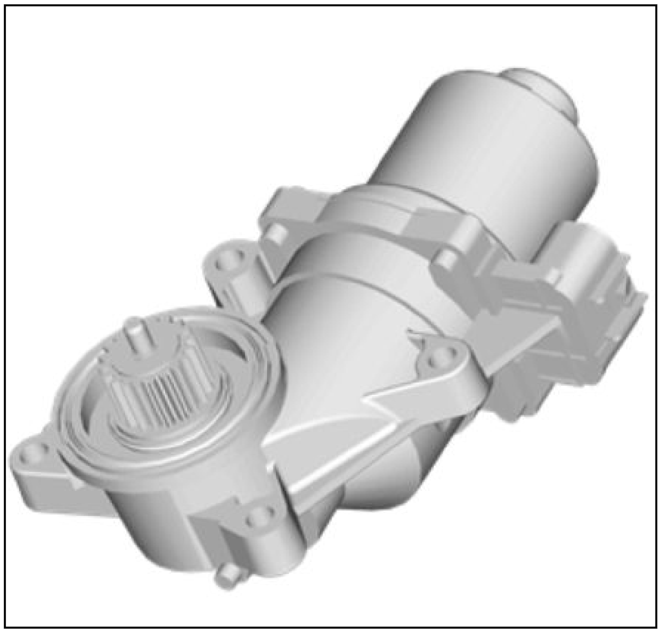
NEUTRAL Mode Power Flow

Shifting to the NEUTRAL position, the high/low clutch is centered between the input shaft and the high/low planetary carrier. The high/low clutch is not engaged with either the input shaft or the high/low planetary carrier teeth.

Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the Drivers Information Center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system malfunction has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

Transfer Case Two/Four Wheel Drive Actuator Assembly



1986212

The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it rotates the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI or 4HI to NEUTRAL and 4LO positions. The two/ four wheel drive incremental sensor and motor lock are internal to the actuator motor assembly.

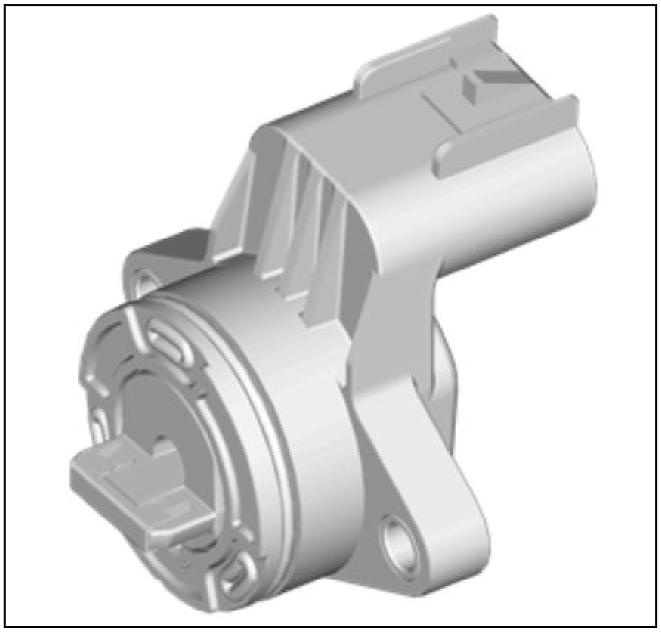
Transfer Case Motor Lock

The transfer case motor lock is internal to the transfer case actuator motor and is replaced with the actuator motor as an assembly. The motor lock is used to provide a 2HI, 4HI, and 4LO motor locking feature. When the lock circuit is energized, the transfer case actuator motor is allowed to turn. When the transfer case is placed 2HI, 4HI, or 4LO the motor lock circuit is de-energized and the lock is applied. This assures that the transfer case remains in the current gear position until a new gear position is requested. When AUTO 4WD is selected, the motor lock remains applied until an adaptive mode torque being applied to the front propeller shaft is required. During an adaptive mode condition the motor lock circuit is energized and the motor lock is released, enabling the actuator motor to turn and apply or release torque at the front propeller shaft.

Transfer Case Two/Four Wheel Drive Incremental Sensor

The incremental sensor is internal to the transfer case actuator motor and is replaced with the motor as an assembly. The incremental sensor converts the shift detent lever shaft position, representing a mode or range, into an electrical signal input to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the voltage returned on the incremental encoder impulse signal circuit. This voltage translates into AUTO 4WD, 2HI, 4HI, NEUTRAL, and 4LO or in transition between gears.

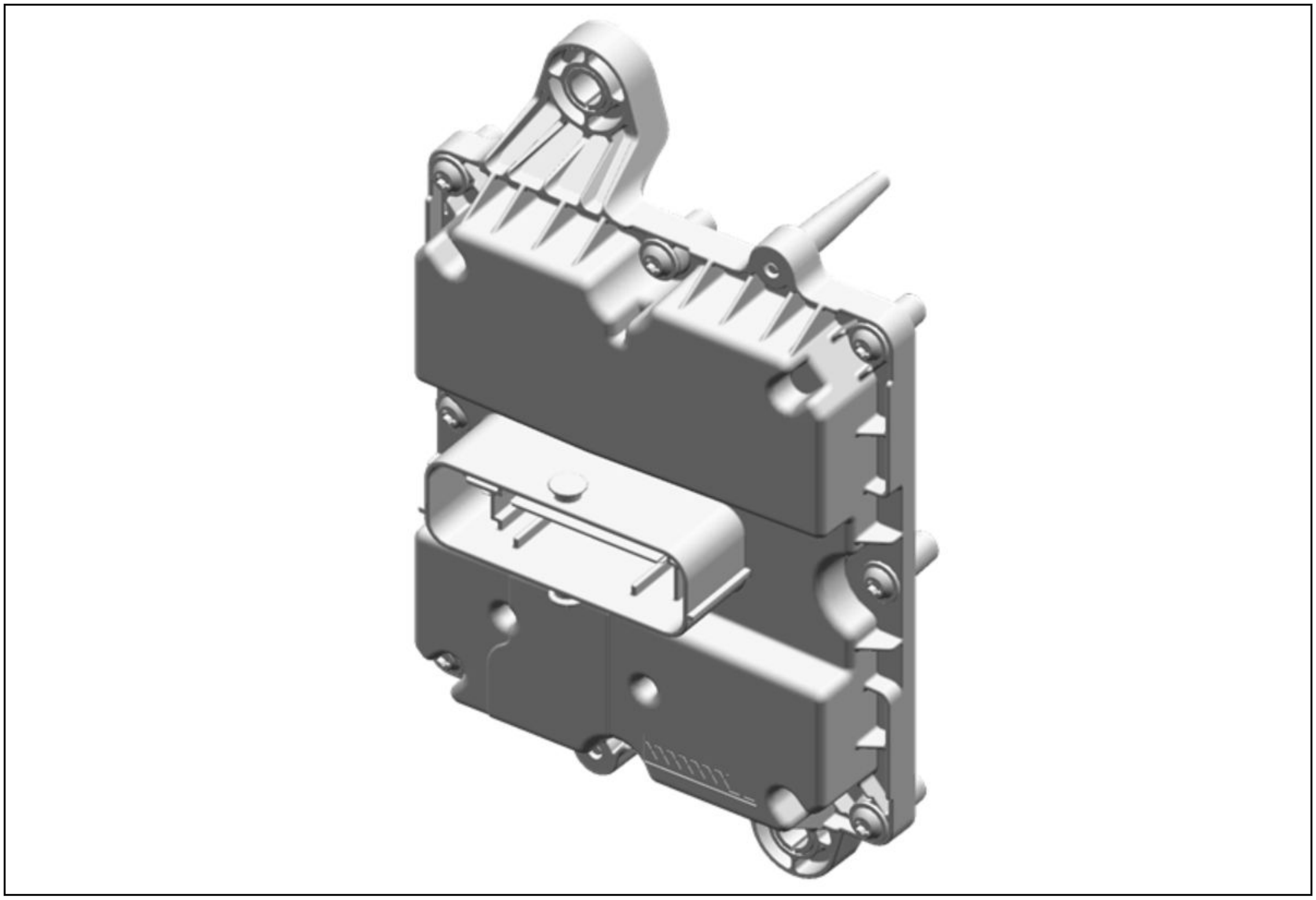
Transfer Case Actuator Shaft Position Sensor Assembly



1986213

This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

Transfer Case Shift Control Module



5071149

The transfer case shift control module uses the vehicle identification number (VIN) information for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTtrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect wheel slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propeller shaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.